TOSHIBA

FILE NO. 810-200550

SERVICE MANUAL

DVD RAM RAM 4.7 DVD R/RW DVD VIDEO COMPACT disc DIGITAL AUDIO VIDEO Plus+ DOLBY DIGITAL dts DIGITAL OUT

DVD RECORDER & VCR

D-VR15SB
D-VR25SB
D-VR35SB
D-VR30SF
D-VR30SG

Issued in Japan.,June., 2005 Ⓢ

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1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.
(2)When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.
Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.
Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

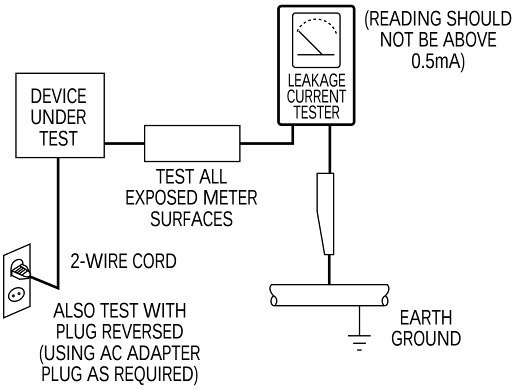
(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METER SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer. See Fig. 1-2.

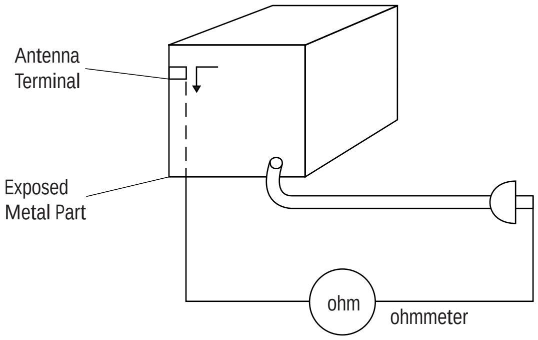

Fig. 1-2 Insulation Resistance Test

2) Read and comply with all caution and safety related notes on or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/ or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (⚡)or a (⚠)on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION : Before servicing units covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and /or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength.
When replacing components, use components which have the same ratings. Components identified by shading, by(⚡) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal devices. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

- ◆ Be sure to put on a wrist strap grounded to the sheet.
- ◆ Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

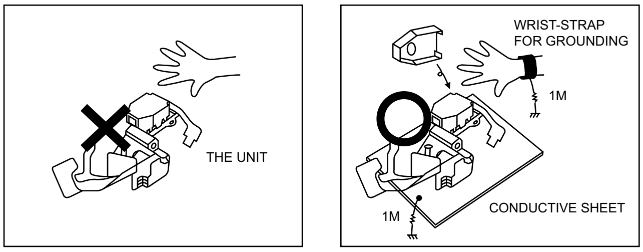

Fig.1-3

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.

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2. Product Specification

2-1 Product Specification

General	Power requirements	AC 220-240V, 50Hz
	Power consumption	45Watts
	Weight	4.8Kg
	Dimensions	430(W) x 321(D) x 84(H)
	Operating temp	+5°C to + 35°C
	Other conditions	Keep level when operating.Less than 75%operating humidity
Input	Video input(Rear)	Euro Scart socket :1.0Vp-p(unbalanced)75 Ω
	Audio input(Rear)	Euro Scart socket :-8dBm,47Kohm unbalanced
	Front input	RCA jack,S-Video In
Output	RF out	UHF 21-69 (Initial CH60)
	Audio (DVD, VCR)	RCA jack,Euro Scart socket,Audio L/R
	Audio (DVD, Only)	DIgital audio out COAXIAL
	Video (DVD, VCR)	RCA jack,Euro Scart socket (Composite,RGB), S-Video Out,Component Out
VCR	Tape format	VHS type video tape
	Colour system	PAL
	Tuning System	I
	Video S/N	Above 43dB (standard recording)
	Resolution	Above 240 lines (standard recording)
	Audio S/N	Above 68dB (Hi-Fi), 39dB(Mono)
	Audio frequency characteristics	20Hz-20KHz(Hi-Fi)
DVD	Picture compression format	MPEG-II
	Audio compression format	Dolby AC-3 256kbps
	Recording Qallity	XP(8Mbps), SP(4Mbps), LP(2Mbps), EP(1.2/0.8Mbps)
	Video S/N	Ratio Min.50dB at standard recording
	Audio S/N	Ratio Min. 75dB
	Audio frequency characteristics	20Hz ~ 20KHz

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3. Software Update

3-1 Drive Firmware Update

3-1-1 Introduction

Toshiba will often support software update to improve the performance of DVD Recorder&VCR to the latest status.

3-1-2 How to make an update disc

NOTE

- Recommended Application Programme
  - Nero Burning / Easy CD Creator ..etc
- Option
  - Name : SDM2224
  - Extension name : “*.REC”
  - Multisession : No Multisession
  - File name lenght : Max. of 11 = 8 + 3
  - Format : Mode 1
  - Character set : ISO 9660 or Joliet Format
  - CD Close & Disc at once
  - Label : RAMBO

WARNING

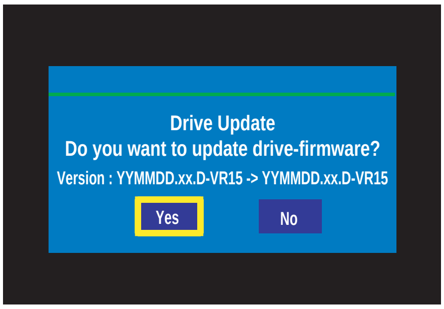
It is very important : please read the below notice before updating your unit.
The following events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING

① The power cord unplugged.
② Power Outage.
③ Dirt or Scratches on the disc.
④ Opening a disc tray during processing.

3-1-3 How to update software

1) Press **OPEN/CLOSE** to open the disc tray.
2) Insert the update CD-R disc with the software update, label facing up.
3) Press **OPEN/CLOSE** to close the disc tray.

* It takes about 1~2 minites before the message below appears.



Drive Update
Do you want to update drive-firmware?
Version : YYMMDD.xx.D-VR15 -> YYMMDD.xx.D-VR15

Fig. 3-2

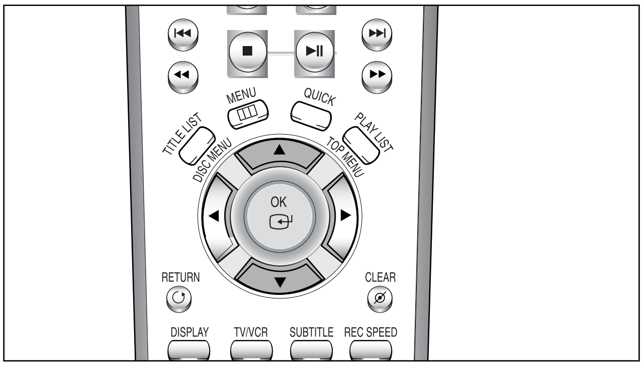
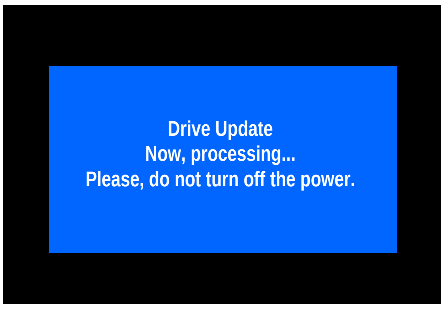


Fig. 3-1 Remote Controller

After checking old and new version, select “Yes” or “No” with “ ◀ ” or “ ▶ ” on the remote controller.
* The Version is indicated by “XX.X modelname”

* If you don’t see the message above, try another disc. Generally, this is caused by disc quality and by disc creating problem.

4) Press the **OK** button on the remote control (Fig. 3-1).

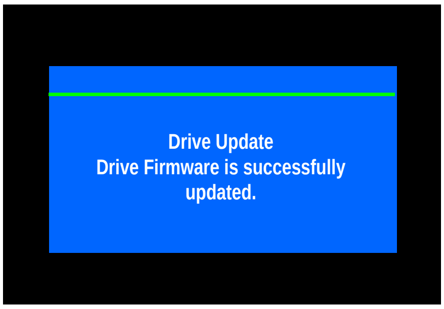


Drive Update
Now, processing...
Please, do not turn off the power.

Fig.3-3

You will see “LOAD” on FLT Display.

5) It takes about 1~2 minutes to complete the update.
The message below will be displayed in the screen after update is completed and the tray will open automatically.



Drive Update
Drive Firmware is successfully updated.

Fig. 3-4

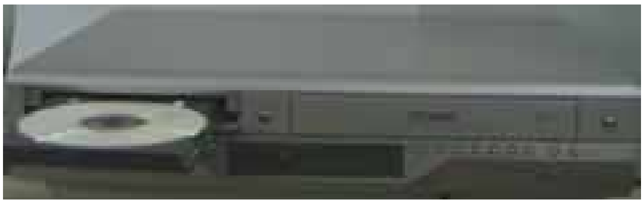


Fig. 3-5

6) After removing the update disc, turn off the unit with power button.
And turn on the unit with power button and then the tray will close.
The drive firmware is now completed.

3-2 Flash Update

3-2-1 Introduction

Toshiba will often support software update to improve the performance of DVD Recorder&VCR to the latest status.

3-2-2 How to make an update disc

NOTE

- Recommended Application Program
  - Nero Burning / Easy CD Creator ..etc
- Option
  - Only single session
  - CD close & disc at once
  - ISO 9660 or joliet format
  - Extension name : “*.RUF”
- In order to increase dise playability, add a dummy file (over 100MB) together with the latest program. (The dummy file can be used any kind of file except MP3, AVI, MPEG, MPG, divx, LPCM, AAC, Ogg file which can be played in the unit and we recommend to use a file with extension name as “*.dmy”, which can be changed from original one.)

WARNING

It is very important : please read the below notice before updating your unit.

The following events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING

① The power cord unplugged.
② Power Outage.
③ Dirt or Scratches on the disc.
④ Opening a disc tray during processing.

3-2-3 How to update software

1) Press **OPEN/CLOSE** to open the disc tray.
2) Insert the update CD-R disc with the software update, label facing up.
3) Press **OPEN/CLOSE** to close the disc tray.

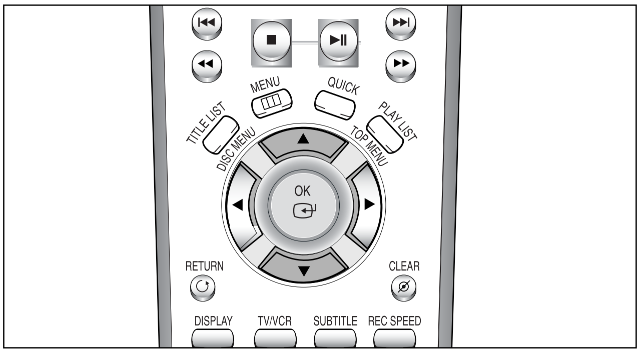


Fig. 3-6 Remote Controller

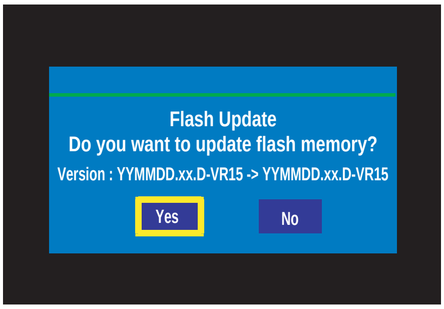

Flash Update
Do you want to update flash memory?
Version : YYMMDD.xx.D-VR15 -> YYMMDD.xx.D-VR15

Fig. 3-7

After checking old and new version, select “Yes” or “No” with “◀” or “▶” on the remote controller.
* The Version is indicated by “YYMMDD.xx modelname”

* If you don’t see the message above, try another disc.
Generally, this is caused by disc quality and by disc creating problem.

4) Press the **OK** button on the remote control (Fig. 3-6).

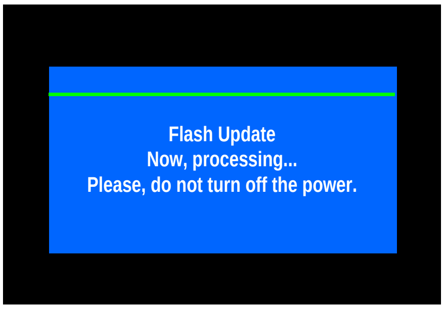

Flash Update
Now, processing...
Please, do not turn off the power.

Fig. 3-8

5) It takes about 5 minutes to complete the update.
The message below will be displayed in the screen after update is completed and the tray will open automatically.

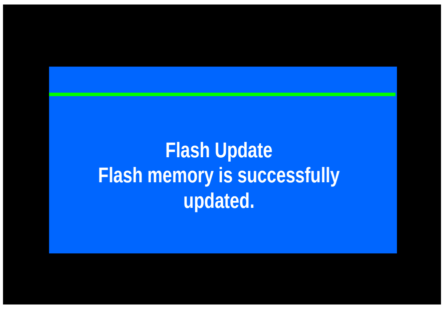

Flash Update
Flash memory is successfully updated.

Fig. 3-9

* If the message to the left isn’t displayed after 10minutes and the unit is no longer functioning properly, contact a TOSHIBA authorized service center.

6) After removing the update disc, turn off the unit with power button.
And turn on the unit with power button and then the tray will close.
The Flash update is now completed.

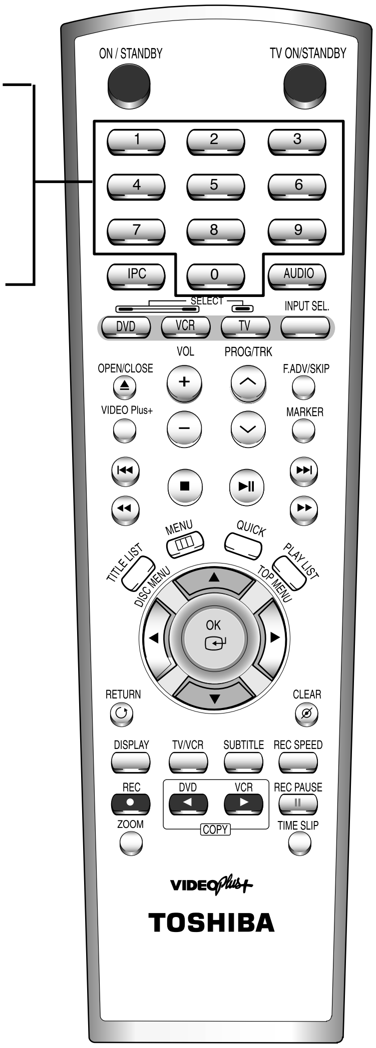
4. Alignment and Adjustments

4-1 VCR Adjustment

4-1-1 Reference

1) X-Point (Tracking center) adjustment, “Head switching adjustment” and “NVRAM option setting” can be adjusted with remote control.
2) When replacing the Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) be sure to adjust the “Head switching adjustment” and “NVRAM option setting”.
3) When replacing the cylinder ass’y, be sure to adjust the “X-Point” and “Head switching adjustment”.
4) How to adjust.
   - Intermittently short-circuit the Test Point on Main PCB with pincers to the adjustment mode.
   - If the corresponding adjustment button is pressed, the adjustment is performed automatically.
   - When the adjustment is completed, be sure to turn the power off.

4-1-1(a) Location of adjustment button of remote control


ON / STANDBY
TV ON/STANDBY
1
2
3
4
5
6
7
8
9
IPC
0
AUDIO
SELECT
INPUT SEL.
DVD
VCR
TV
VOL
PROG/TRK
OPEN/CLOSE
F.ADV/SKIP
VIDEO Plus+
MARKER
MENU
QUICK
TITLE LIST
PLAY LIST
DISC MENU
TOP MENU
OK
RETURN
CLEAR
DISPLAY
TV/VCR
SUBTITLE
REC SPEED
REC
DVD
VCR
REC PAUSE
ZOOM
COPY
TIME SLIP
VIDEOPlus+
TOSHIBA

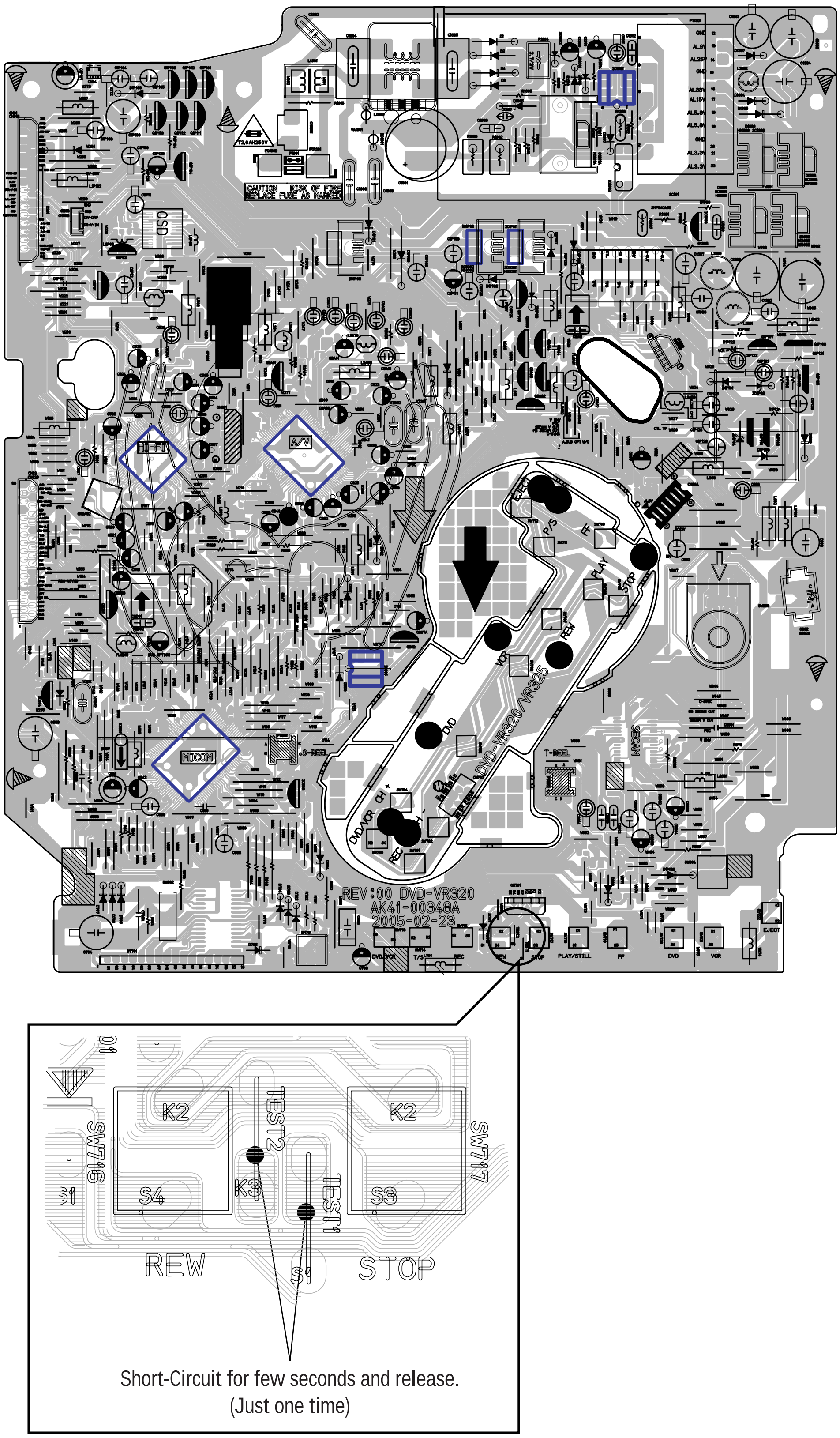
☞ X-Point (Tracking Center) Adjustment ; ⓪ + ⑤

☞ NVRAM Option Setting ; ① + ④

☞ Head Switching Adjustment ; ① + ⓪

Fig. 4-1

4-1-1(b) TEST location for adjustment mode setting


CAUTION RISK OF FIRE REPLACE FUSE AS MARKED
OSD
HI-FI
A/V
MICOM
T-REEL
S-REEL
EJECT
P/S
FF
PLAY
STOP
REW
VCR
DVD
DVD/VCR
CH
REC
DVD-VR320/VR325
REV:00 DVD-VR320
AK41-00348A
2005-02-23
PLAY/STILL
SW716
SW717
K2
K3
S4
S3
S1
TEST2
TEST1
REW
STOP

Short-Circuit for few seconds and release.
(Just one time)

Fig. 4-2 VCR Main PCB (Top View)

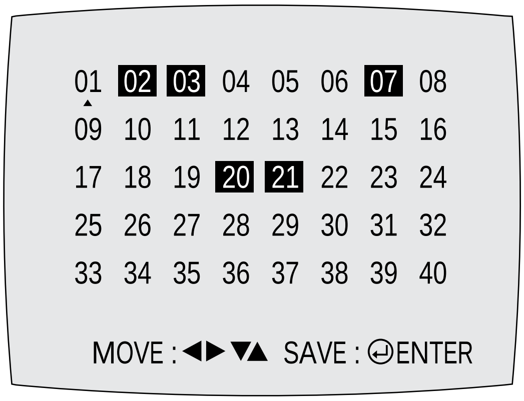
4-1-2 Head Switching Point Adjustment

1) Playback the alignment tape.
2) Intermittently short-circuit the two Test Points on VCR Main PCB while setting the adjustment mode. (See Fig. 4-2)
3) Press the “1, 0” buttons; remote control adjustment operates automatically. (See Fig. 4-1)

4-1-3 NVRAM Option Setting

1) NVRAM Option is adjusted in the factory.
2) In case Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) are replaced, be sure to set the corresponding option number of the required model. (If the option is not set, the unit will not operate.)

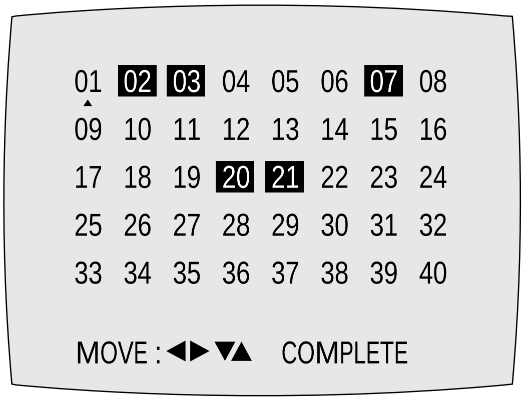
1) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 4-2)
2) Press the “1, 4” button on the remote control. The option setting appears. (See Fig. 4-3)
3) Select the option number (See table 4-1) of corresponding model with “◀, ▶, ▲, ▼” buttons on the remote control.
4) After selecting the option number is completed, press the “▲” button of remote control. (If “▲” button is pressed, the selected number is changescolor. ; See Fig. 4-4)
5) Press the “ENTER” button of remote control again to store the option number.
6) Turn the Power off.



01 02 03 04 05 06 07 08
09 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40

MOVE : ◀▶▼▲ SAVE : ↵ENTER

Fig. 4-3



01 02 03 04 05 06 07 08
09 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40

MOVE : ◀▶▼▲ COMPLETE

Fig. 4-4

<Table 4-1 NVRAM Option Table>

MODEL	OPTION NUMBERS
D-VR15-S-TB	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 25, 26, 32, 34, 38, 40, 41, 45, 47, 50, 58, 61, 63, 64, 65, 66, 68, 69, 70, 72
D-VR25-S-TB	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 25, 26, 32, 34, 38, 40, 41, 45, 47, 50, 58, 61, 62, 63, 64, 65, 66, 68, 69, 70, 72
D-VR35-S-TB	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 25, 26, 32, 34, 38, 40, 41, 45, 47, 50, 58, 61, 63, 64, 65, 66, 68, 69, 70, 72
D-VR30-S-TF	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 21, 26, 32, 33, 34, 35, 36, 38, 40, 44, 45, 47, 50, 58, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72
D-VR30-S-TG	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 32, 34, 36, 38, 40, 42, 44, 45, 47, 50, 58, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72

4-2 VCR Mechanical Adjustment

4-2-1 Tape Transport System and Adjustment Locations

The tape transport system has been adjusted precisely in the factory. Alignment is not necessary except for the following :
1) Noise observed on the screen.
2) Tape damage.
3) Parts replacement in the tape transport system.

Lower flange height of tape guide is used as the reference for the transport adjustment.
To maintain the height of the tape guide and prevent damage, do not apply excessive force onto the main base.

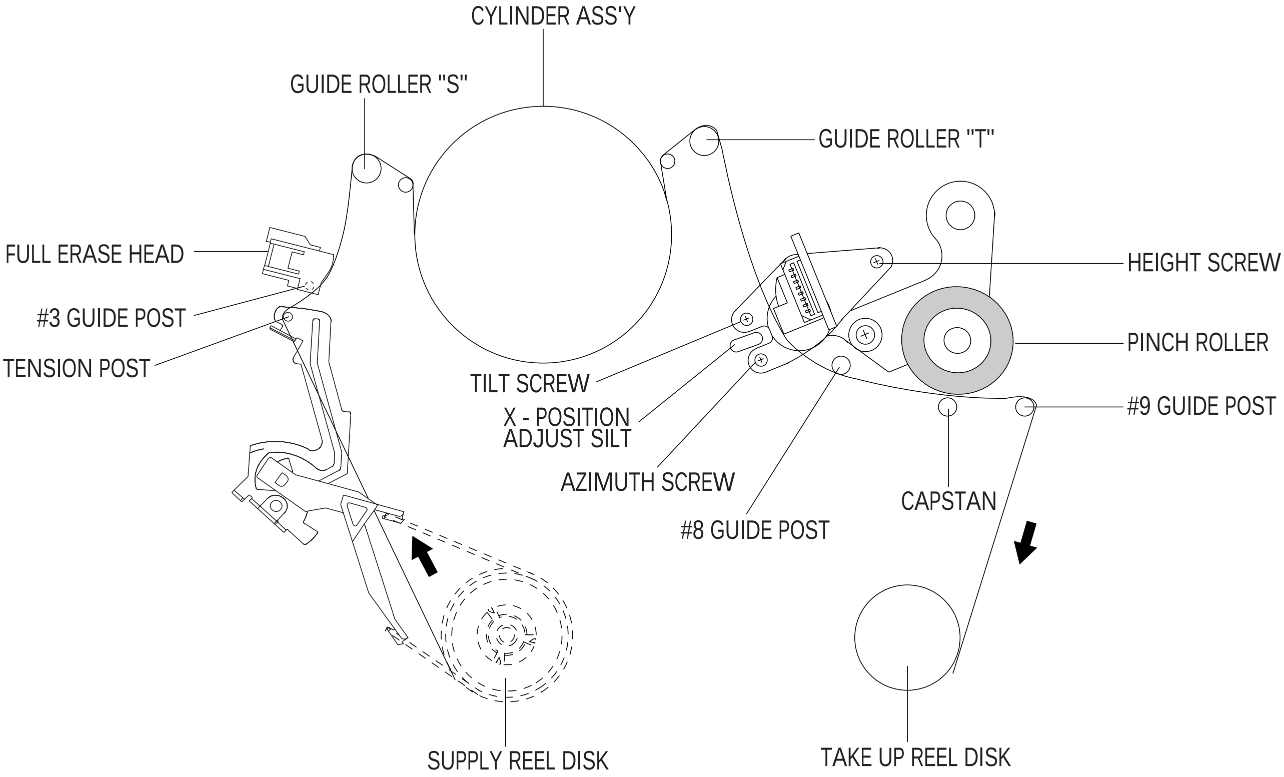

CYLINDER ASS'Y
GUIDE ROLLER "S"
GUIDE ROLLER "T"
FULL ERASE HEAD
HEIGHT SCREW
#3 GUIDE POST
TENSION POST
PINCH ROLLER
TILT SCREW
#9 GUIDE POST
X - POSITION
ADJUST SILT
AZIMUTH SCREW
CAPSTAN
#8 GUIDE POST
SUPPLY REEL DISK
TAKE UP REEL DISK

Fig. 4-5 Location of Tape Transport Adjustment

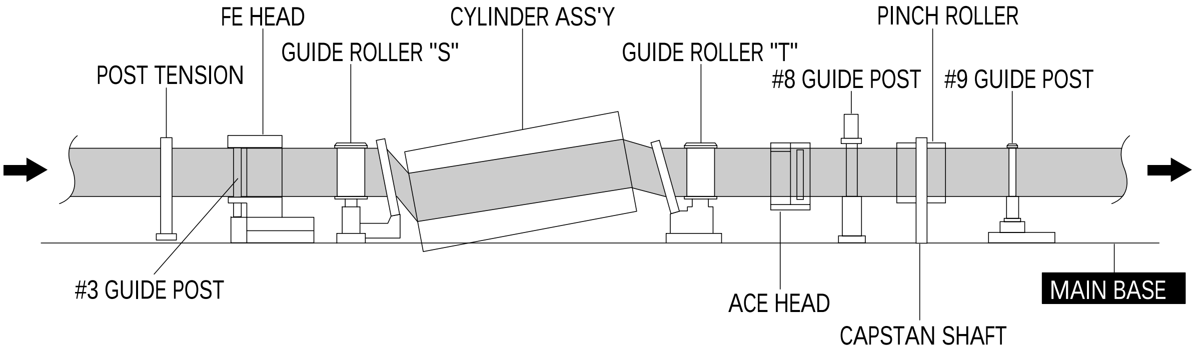

FE HEAD
CYLINDER ASS'Y
PINCH ROLLER
GUIDE ROLLER "S"
GUIDE ROLLER "T"
POST TENSION
#8 GUIDE POST
#9 GUIDE POST
#3 GUIDE POST
ACE HEAD
MAIN BASE
CAPSTAN SHAFT

Fig. 4-6 Tape Travel Diagram

4-2-2 Tape Transport System Adjustment

When parts are replaced, perform the required adjustments by referring to procedures for the tape transport system. If there are any changes to the tape path, first run a T-120 tape and make sure excessive tape wrinkle does not occur at the tape guides.

◆ If tape wrinkle is observed at the guide roller S, T, turn the guide roller S, T until wrinkle disappears.
◆ If the tape wrinkle is still observed at the tape guide, perform the tilt adjustment of the ACE head.

(1) ACE Head Assembly Adjustment

a. ACE HEAD HEIGHT ADJUSTMENT

1) Run the alignment tape (Color bar) in the playback mode.
2) Observe surface of the audio head using a dental mirror.
3) Turn screw (C) clockwise or counterclockwise until the gap of lower tape edge and the lower edge of the control head is about 0.25mm. (Refer to Fig. 4-7 and 4-8)

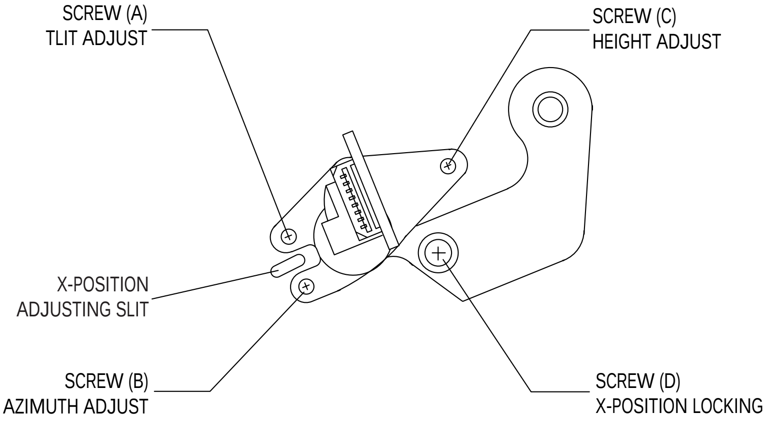

SCREW (A)
TLIT ADJUST
SCREW (C)
HEIGHT ADJUST
X-POSITION
ADJUSTING SLIT
SCREW (B)
AZIMUTH ADJUST
SCREW (D)
X-POSITION LOCKING

Fig. 4-7 Location of ACE Head Adjustment Screw

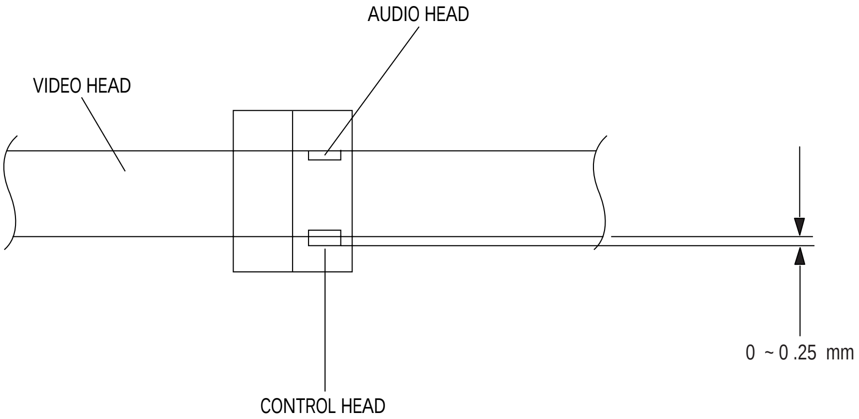

AUDIO HEAD
VIDEO HEAD
0 ~ 0 .25 mm
CONTROL HEAD

Fig. 4-8 ACE Head Height Adjustment

b. ACE HEAD TILT ADJUSTMENT

1) Playback a blank tape and observe the position of the tape at the lower flange of tape guide.
2) Confirm that there is no curl or wrinkle at the lower flange of tape guide as shown in Fig. 4-9 (B).
3) If a curl or wrinkle of the tape occurs, slightly turn the screw (A) tilt adjust on the ACE head ass'y.
4) Reconfirm the ACE head height.

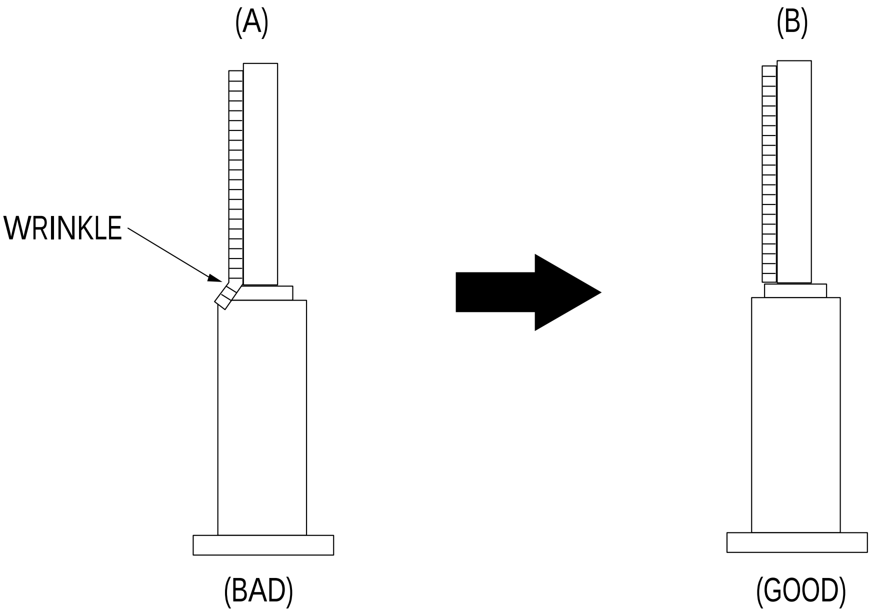


Fig. 4-9 Tape Guide Check

c. AUDIO AZIMUTH ADJUSTMENT

1) Load alignment tape (Mono scope) and playback the 7KHz signal.
2) Connect channel-1 scope probe to audio output.
3) Adjust screw (B) to achieve maximum audio level. (See Fig. 4-7)

d. ACE HEAD POSITION (X-POINT) ADJUSTMENT

1) Playback the alignment tape (Color bar)
2) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 4-2)
3) Press the “0, 5” remote control buttons, then adjustment is operates automatically. (See Fig. 4-1)
4) Connect the CH-1 probe to “Envelope” the CH-2 probe to “H’D switching pulse” and then trigger to CH-1.
5) Insert the (-) driver into the X-Point adjustment hole and adjust it so that envelope waveform is maximum.

Test point : TP2 (Audio Output)
TP3 (Envelope)
TP4 (H’D S/W -Trigger)
TP5 (Control Pulse)

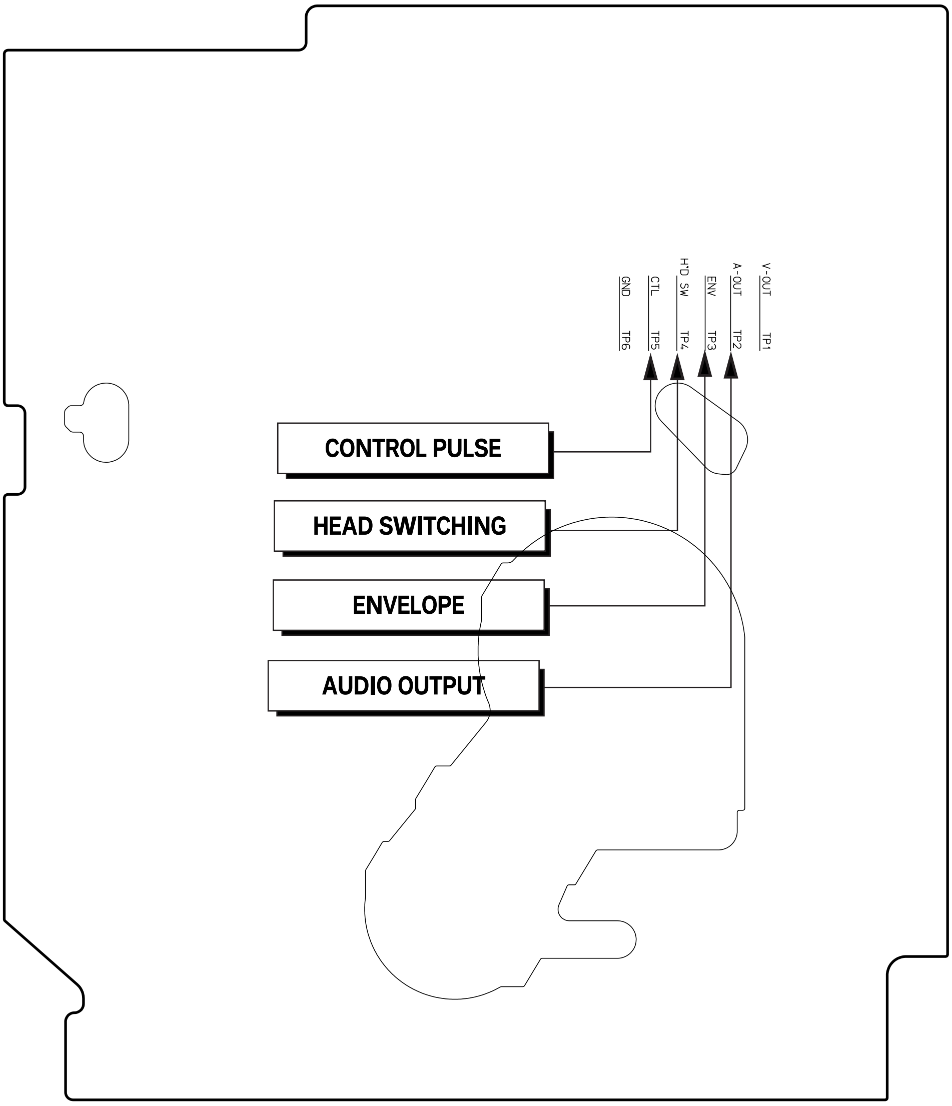

GND TP6
CTL TP5
H'D_SW TP4
ENV TP3
A-OUT TP2
V-OUT TP1
CONTROL PULSE
HEAD SWITCHING
ENVELOPE
AUDIO OUTPUT

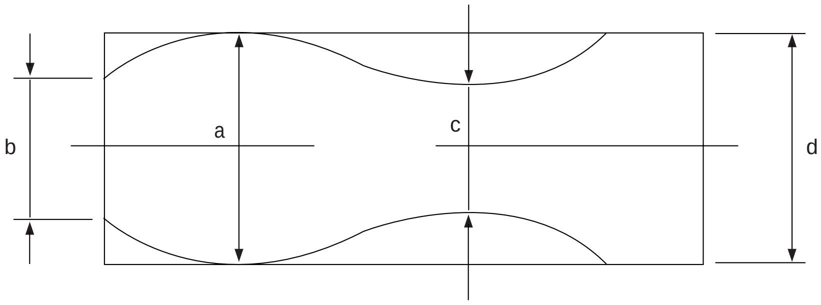
Fig. 4-10 Location of Test point (VCR Main PCB-Top View)

(2) Linearity adjustment (Guide roller S, T adjustment)

1) Playback the Mono Scope alignment tape (SP mode).
2) Observe the video envelope signal on an oscilloscope (triggered by the video switching pulse).
3) Make sure the video envelope waveform (at its minimum) meets the specification shown in Fig. 4-11.
If it does not, adjust as follows :

Note :
a=Maximum output of the video RF envelope.
b=Minimum output of the video RF envelope at the entrance side.
c=Minimum output of the video RF envelope at the center point.
d=Maximum output of the video RF envelope at the exit side.

4) If the section A in Fig. 4-12 does not meet the specification, adjust the guide roller S up or down.
5) If the section B in Fig. 4-12 does not meet the specification, adjust the guide roller T up or down.



a b c d

c,b,d/a ≧ 63%

Fig. 4-11 Envelope Waveform Adjustment

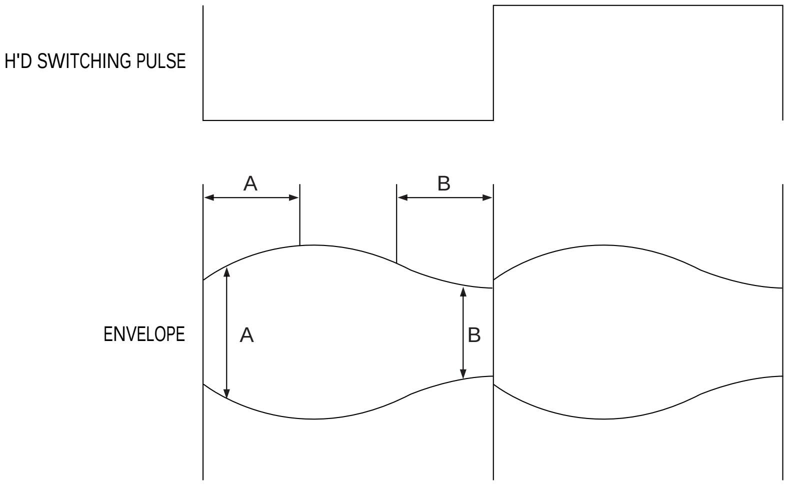


Fig. 4-12 Adjustment Points

6) Play back the Mono Scope alignment tape (SP mode).
7) Connect an oscilloscope CH-1 to the “Envelope” and CH-2 to the “H’D SW Pulse” for triggering.
8) Turn the guide roller heads with a flat head (▬) driver to obtain a flat video RF envelope as shown in Fig. 4-13.

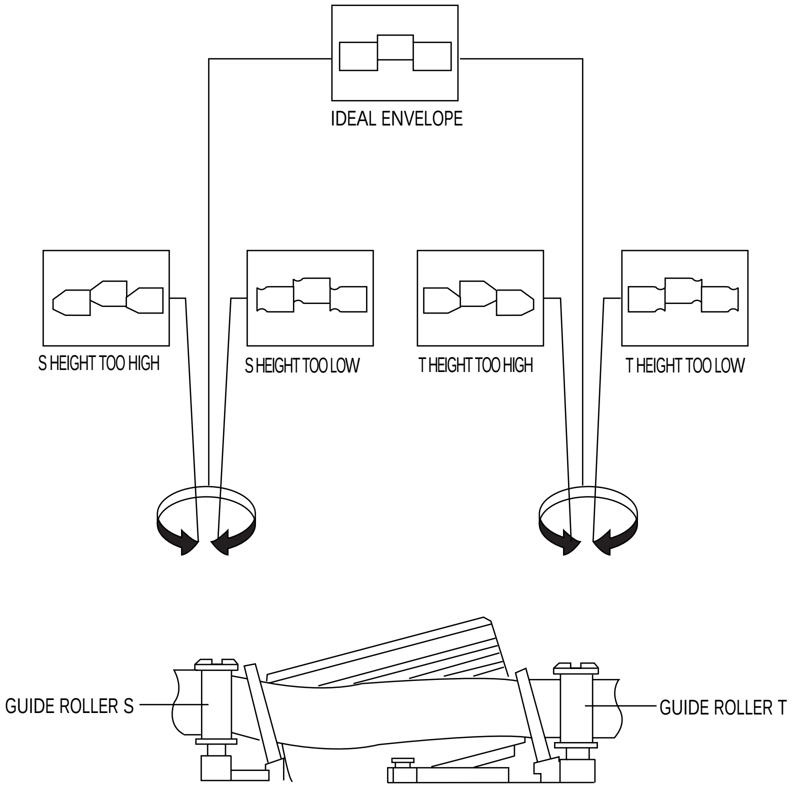

IDEAL ENVELOPE
S HEIGHT TOO HIGH
S HEIGHT TOO LOW
T HEIGHT TOO HIGH
T HEIGHT TOO LOW
GUIDE ROLLER S
GUIDE ROLLER T

Fig. 4-13 Guide Roller S, T Height Adjustment

(3) Check Transitional Operation from RPS to Play

Check transition from RPS mode to play mode : Using a pre-recorded SP tape, make sure the entry side of envelope comes to an appropriate steady state within 3 seconds (as shown in Fig. 4-14).
If the envelope waveform does not reach specified peak-to peak amplitude within 3 seconds, adjust as follows :

1) Make sure there is no gap between the supply roller lower flange and the tape.
   If there is a gap, adjust the supply guide roller again.
2) Change operation mode from the RPS to the play mode (again) and make sure the entry side of envelope rises within 3 seconds.

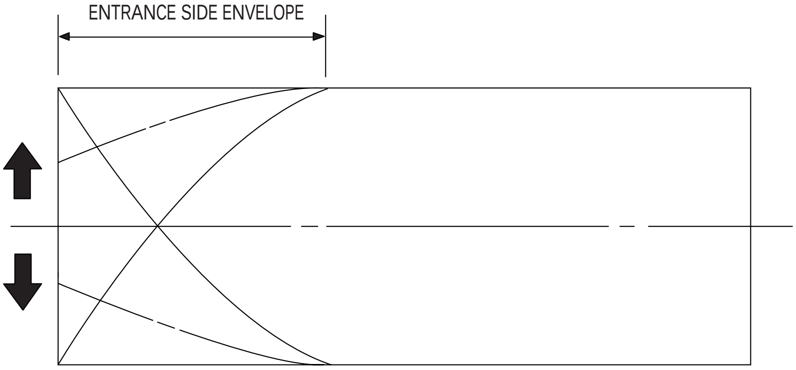


Fig. 4-14 Video Envelope Rising when Operation mode Changes from RPS to Play Mode

(4) Envelope Check

1) Make recordings on T-120 (E-120) and T-160 (E-180) tape.
   Make sure the playback output envelope meets the specification as shown in Fig. 4-15.
2) Play back a self recorded tape (recording made on the unit using with T-120 (E-120).
   The video envelope should meet the specification as shown in Fig. 4-15.
   In SP mode, (A) should equal (B).
   If the head gap is wide, upper cylinder should be checked.

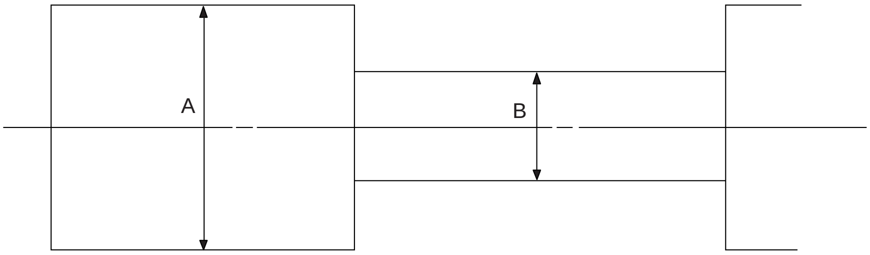


Fig. 4-15 Envelope Input and Output Level

(5) Tape Wrinkle Check

1) Run the T-160 (E-180) tape in the playback, FPS, RPS and Pause modes and observe tape wrinkle at each guide.
2) If excessive tape wrinkle is observed, perform the following adjustments in Playback mode :

- Tape wrinkle at the guide roller S, T section : Linearity adjustment.
- Tape wrinkle at tape guide flange : ACE head assembly coarse adjustment.

4-2-3 Reel Torque

1) The rotation of the capstan motor causes the holder clutch ass'y to rotate through the belt pulley.
2) The spring wrap PLAY/REV of holder clutch ass'y drives the disk reel S, T through gear idler by rotation of gear center ass'y.
3) Brake is operated by slider cam at FF/REW mode.
4) Transportation of accurate driving force is done by gears. (Gear Center Ass'y)

Note : If the spec. does not meet the followings specifications, replace the holder clutch ass'y and then recheck.

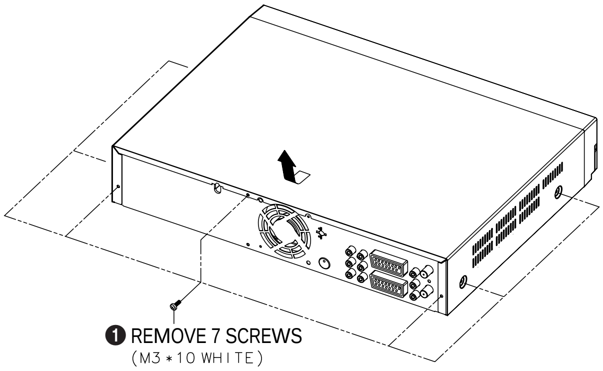
<Table 4-2>

MODE	TORQUE g/cm	GAUGE
PB	42 ± 11	Cassette Torquemeter
RPS	145 ± 30	Cassette Torquemeter

5. Disassembly and Reassembly

5-1 Cabinet and PCB

5-1-1 Cabinet Top Removal

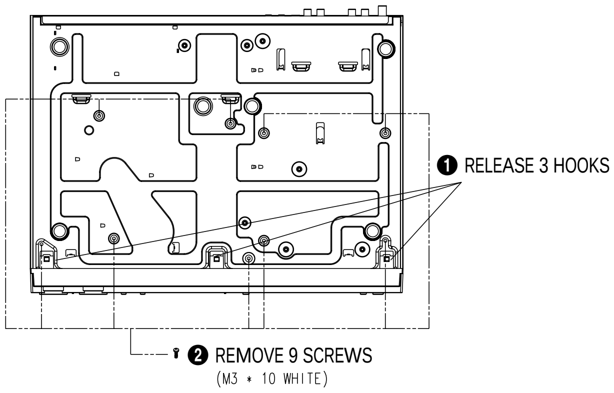


❶ REMOVE 7 SCREWS
(M3 * 10 WHITE)

Fig. 5-1 Cabinet Top Removal

5-1-2 Ass'y Bottom Cover Removal

(Bottom View)

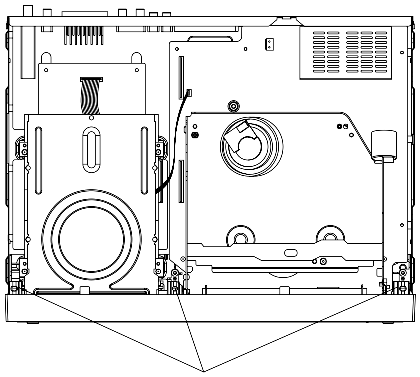


❶ RELEASE 3 HOOKS

❷ REMOVE 9 SCREWS
(M3 * 10 WHITE)

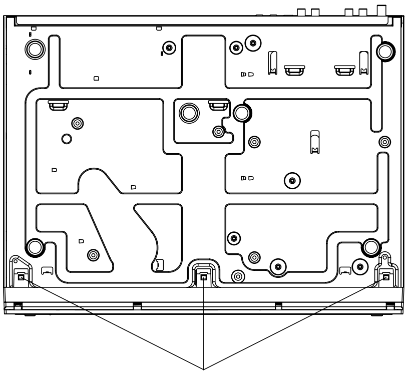
Fig. 5-2 Ass'y Bottom Cover Removal

5-1-3 Ass'y Front Panel Removal



❶ RELEASE 3 HOOKS
(Top View)

Fig. 5-3 Ass'y Front Panel Removal(Top View)



❷ RELEASE 3 HOOKS
(Bottom View)

Fig. 5-4 Ass'y Front Panel Removal(Bottom View)

5-1-4 Chassis Removal

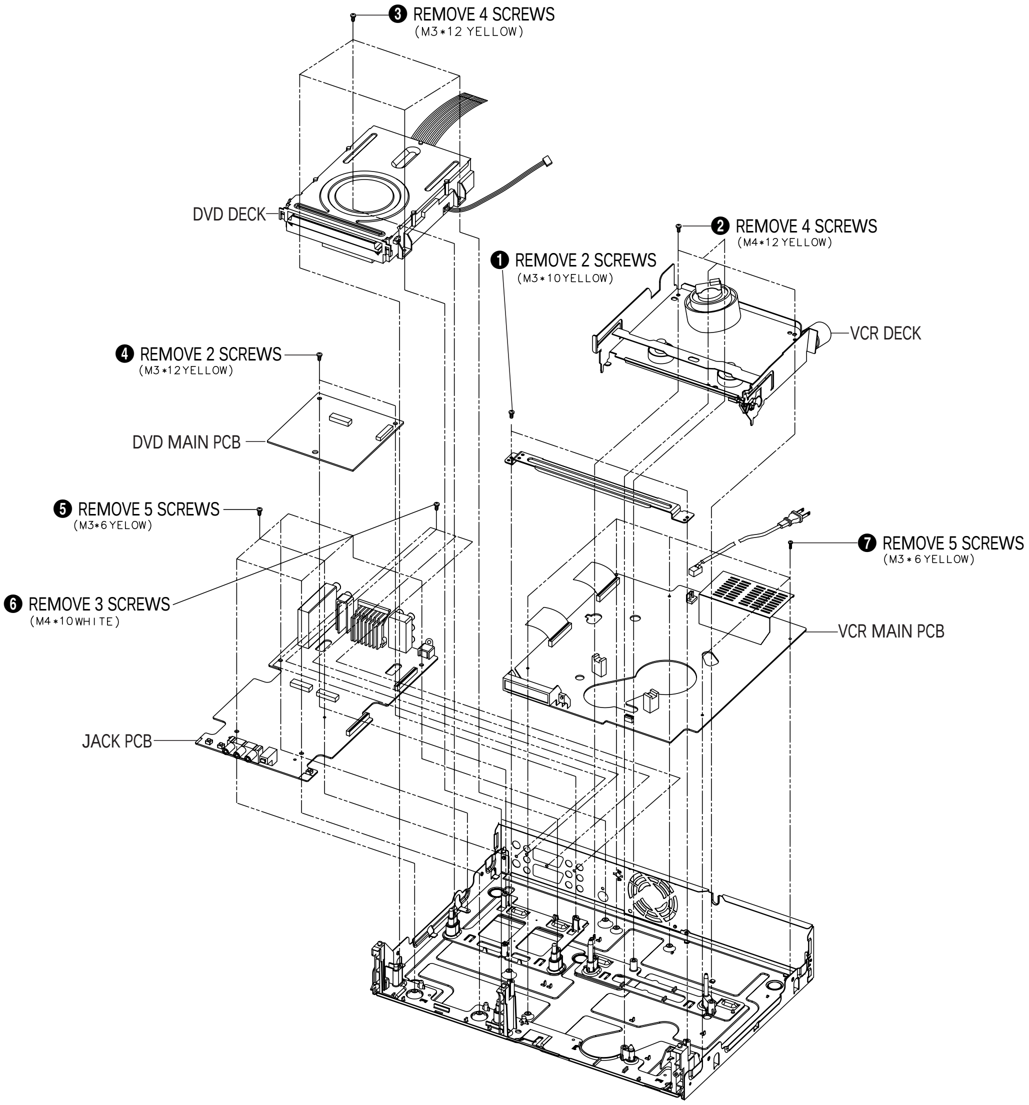
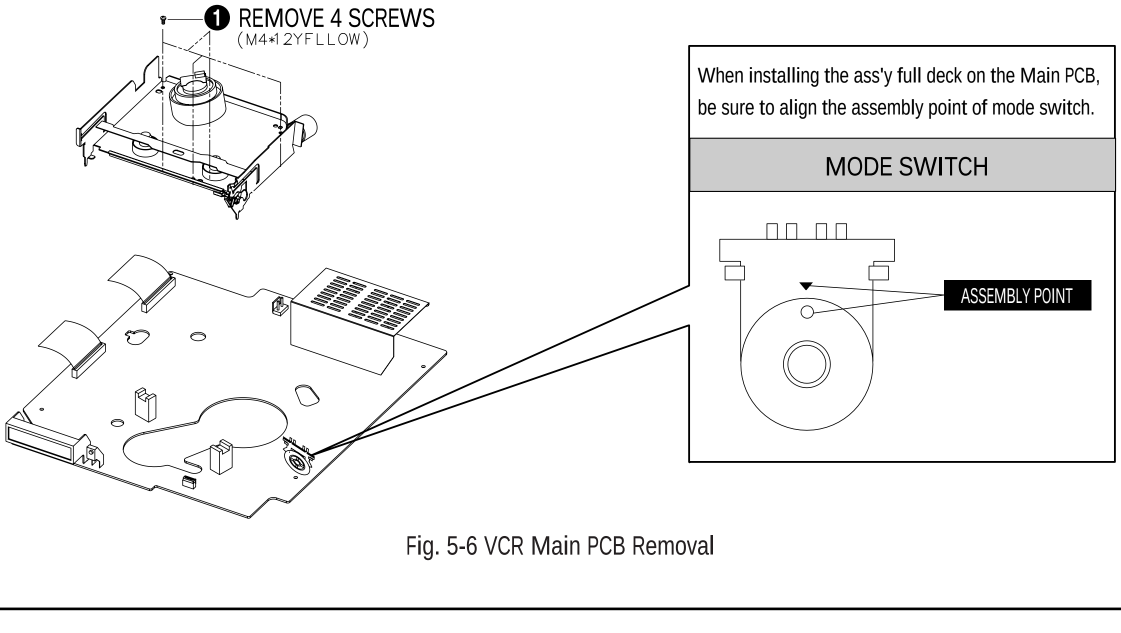

❸ REMOVE 4 SCREWS
(M3*12 YELLOW)
DVD DECK
❷ REMOVE 4 SCREWS
(M4*12 YELLOW)
❶ REMOVE 2 SCREWS
(M3*10YELLOW)
VCR DECK
❹ REMOVE 2 SCREWS
(M3*12YELLOW)
DVD MAIN PCB
❺ REMOVE 5 SCREWS
(M3*6YELOW)
❼ REMOVE 5 SCREWS
(M3*6 YELLOW)
❻ REMOVE 3 SCREWS
(M4*10WHITE)
VCR MAIN PCB
JACK PCB

Fig. 5-5 Chassis Removal

5-1-5 VCR Main PCB Removal


❶ REMOVE 4 SCREWS
(M4*12YFLLOW)
MODE SWITCH
ASSEMBLY POINT

When installing the ass'y full deck on the Main PCB, be sure to align the assembly point of mode switch.

Fig. 5-6 VCR Main PCB Removal

5-2 Circuit Board Locations

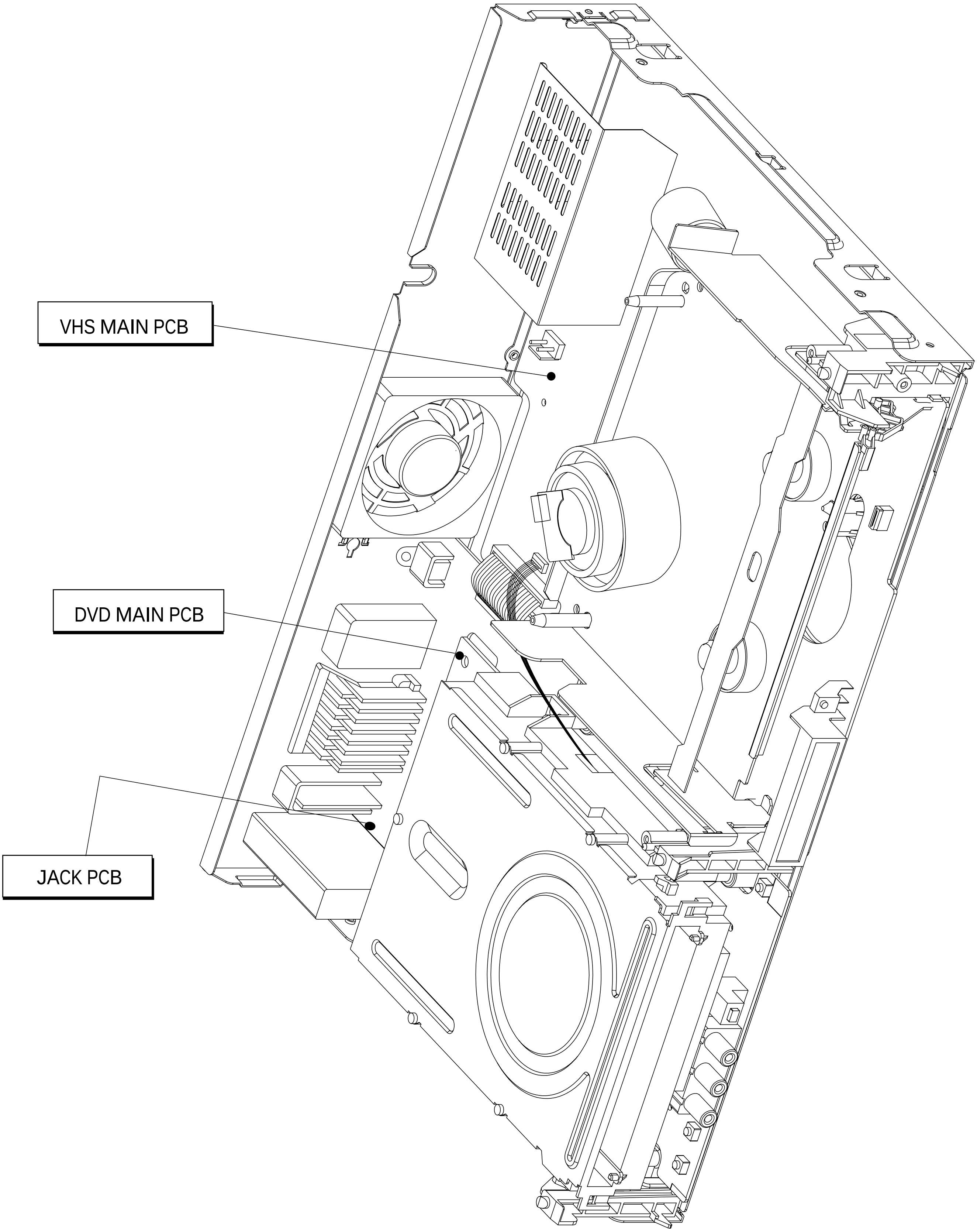

VHS MAIN PCB
DVD MAIN PCB
JACK PCB

Fig. 5-7 Circuit Board Locations

5-3 VCR Deck Parts Locations

5-3-1 Top View

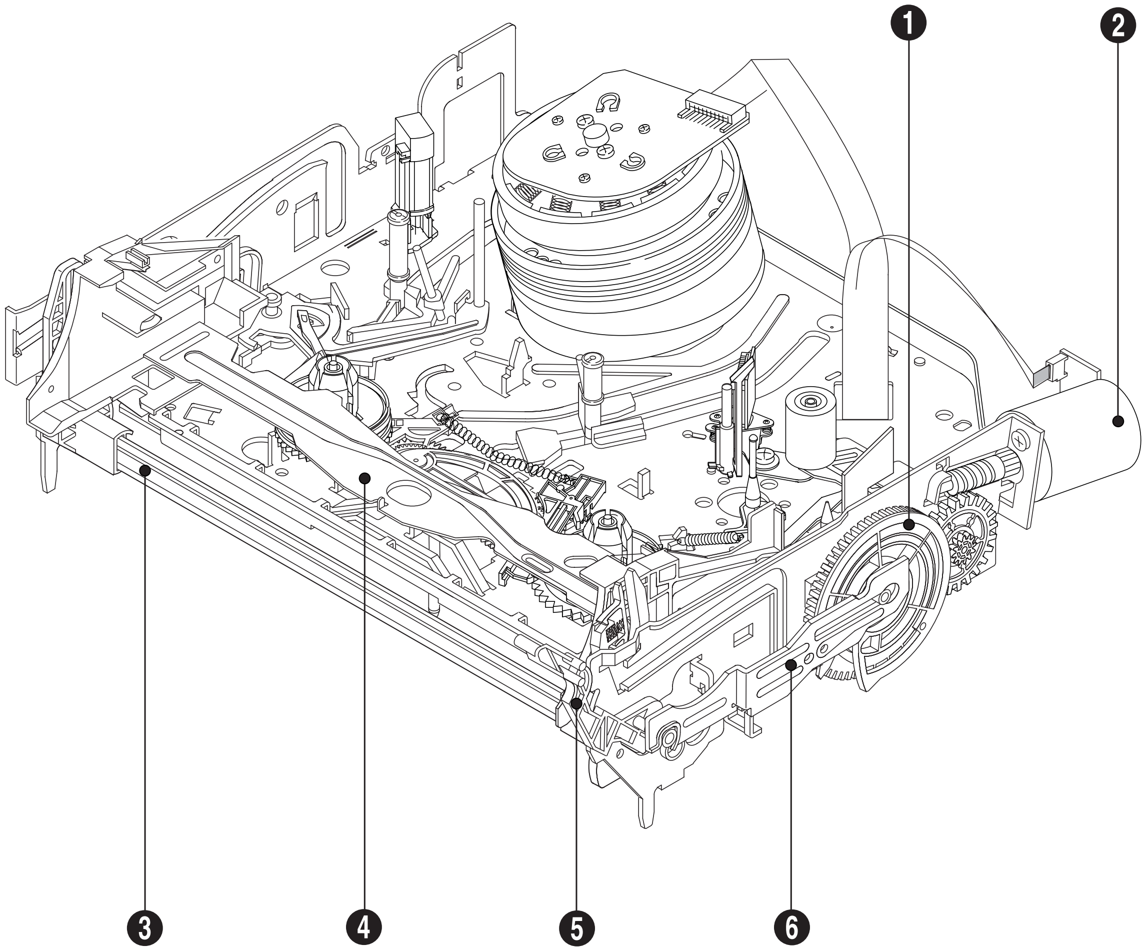


Fig. 5-8 Top parts Location-1

❶ GEAR FL CAM
❷ MOTOR LOADING ASS'Y
❸ LEVER FL ARM ASS'Y
❹ HOLDER FL CASSETTE ASS'Y
❺ LEVER FL DOOR
❻ SLIDER FL DRIVE

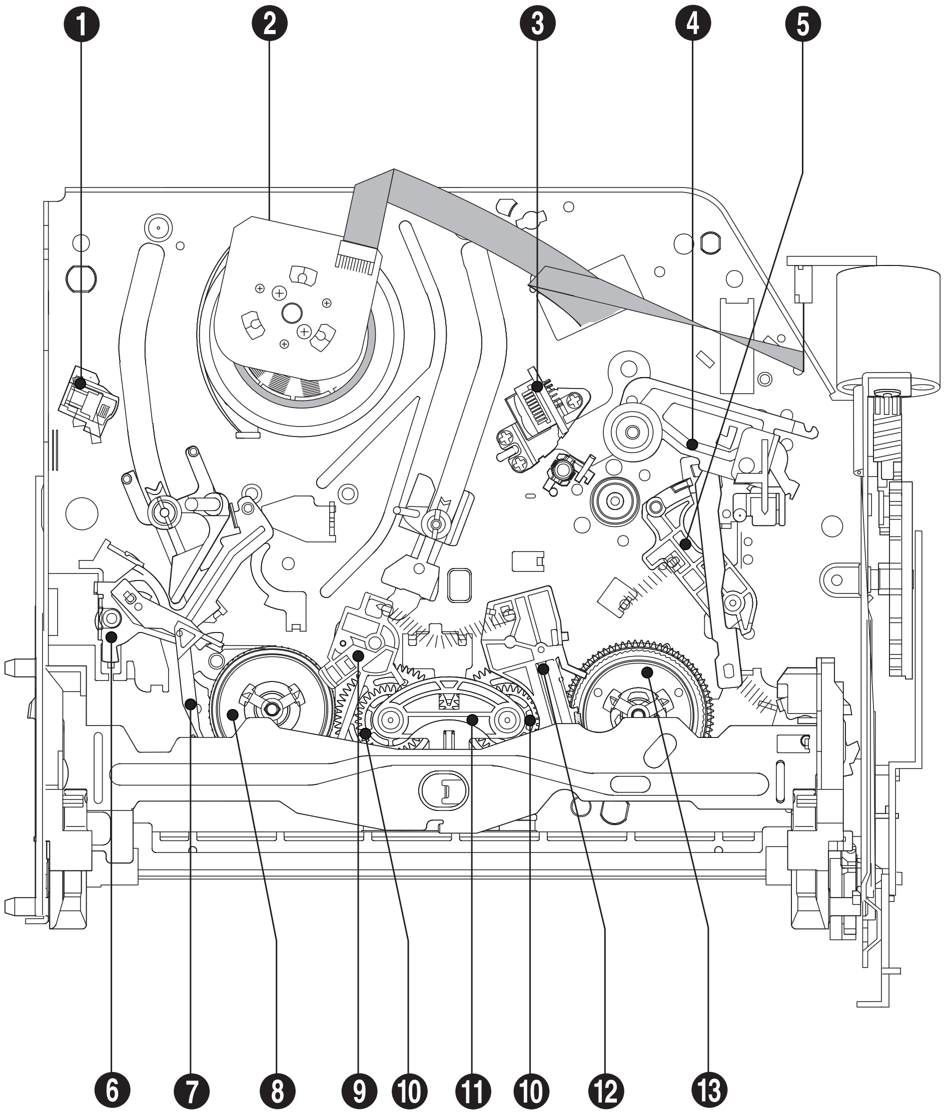


Fig. 5-9 Top Parts Location-2

- ❶ FE HEAD
- ❷ CYLINDER ASS'Y
- ❸ ACE HEAD ASS'Y
- ❹ LEVER UNIT PINCH ASS'Y
- ❺ LEVER #9 GUIDE ASS'Y
- ❻ LEVER TENSION ASS'Y
- ❼ BAND BRAKE ASS'Y
- ❽ DISK S REEL
- ❾ LEVER S BRAKE ASS'Y
- ❿ GEAR IDLE
- ⓫ LEVER IDLE
- ⓬ LEVER T BRAKE ASS'Y
- ⓭ DISK T REEL

5-3-2 Bottom View

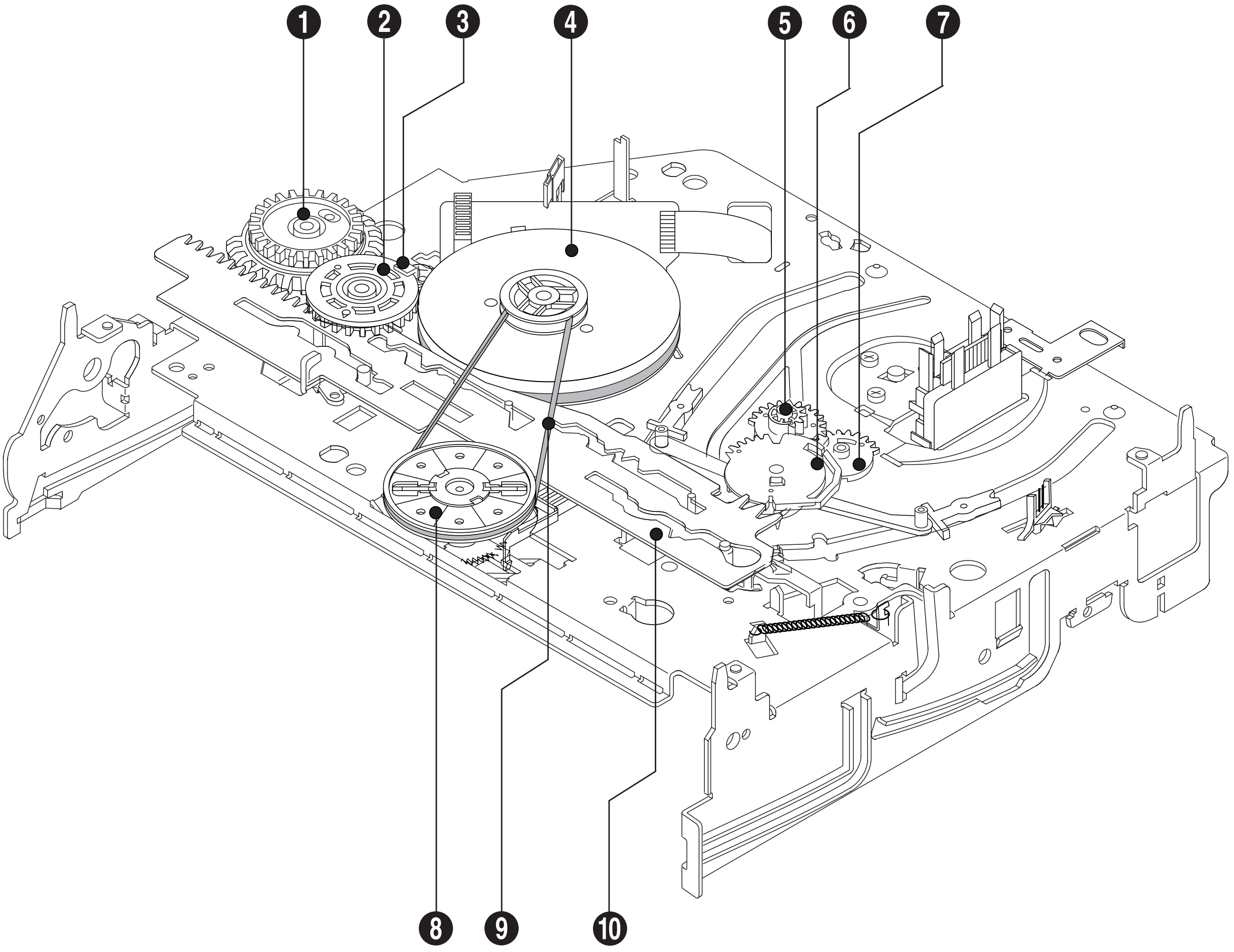


Fig. 5-10 Bottom Parts Location

❶ GEAR JOINT 1
❷ GEAR JOINT 2
❸ BRAKET GEAR
❹ MOTOR CAPSTAN ASS’Y
❺ LEVER T LOAD ASS’Y
❻ GEAR LOADING DRIVE
❼ LEVER S LOAD ASS’Y
❽ HOLDER CLUTCH ASS’Y
❾ BELT PULLEY
❿ SLIDER CAM

5-4 VCR Deck

5-4-1 Holder FL Cassette Ass'y Removal

1) Pull the Holder FL Cassette Ass'y ❶ to the eject position.
2) Pull the Holder FL Cassette Ass'y ❶ as grasping the Holder FL Cassette Ass'y ❶ and Lever FL Cassette-R ❷ in the same time to release hooking from Main Base until the Boss [A] of Holder FL Cassette Ass'y ❶ is taken out from the Rail [B].
3) Lift the Holder FL Cassette Ass'y ❶, in this time, you have to grasp the Lever FL Cassette-R ❷ Continuously until the Holder FL Cassette Ass'y ❶ is taken out completely.

Note : Be sure to insert Lever FL Cassette-R ❷ in the direction of "A" to prevent separation and breakage of the Lever FL Cassette-R ❷ at disassembling and reassembling.

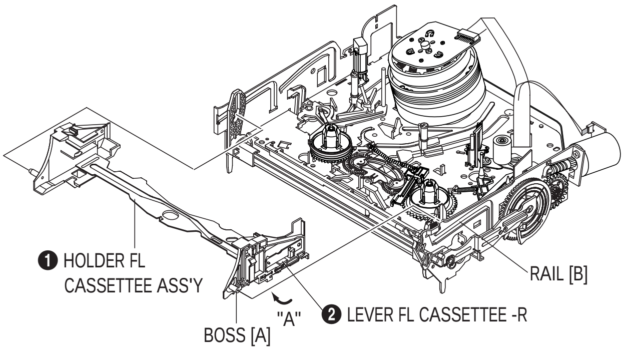


Fig. 5-11 Holder FL Cassette Ass'y Removal

5-4-2 Lever FL Arm Ass'y Removal

1) Push the hole "A" in the direction of arrow "B" use the pin.(about Dia. 2.5)
2) Pull out the Lever FL Arm Ass'y ❶ from the Boss of Main Base.
3) Remove the Lever FL Arm Ass'y ❶ in the direction of arrow "C".

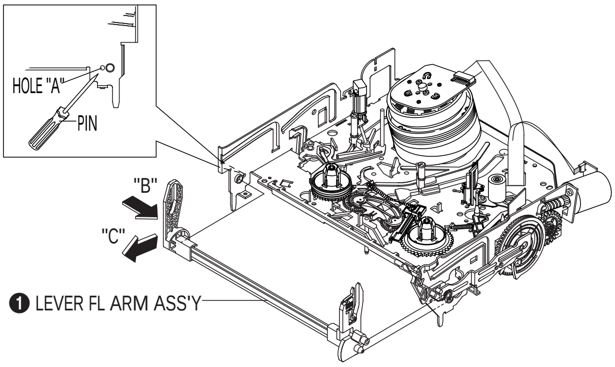


Fig. 5-12 Lever FL Arm Ass'y Removal

5-4-3 Lever FL Door Removal

1) Release the Hook ❷ and Remove the Lever FL Door ❶ in the direction of arrow “A”.

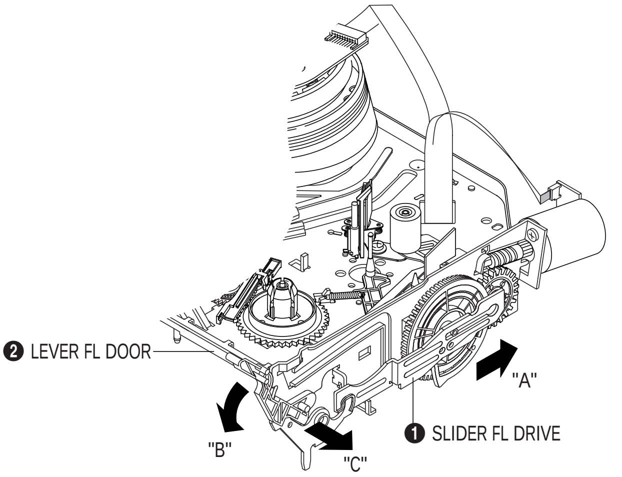

❷ LEVER FL DOOR
"A"
"B"
"C"
❶ SLIDER FL DRIVE

Fig. 5-13 Lever FL Door Removal

5-4-4 Slider FL Drive, Gear FL Cam Removal

1) Pull the Slider FL Drive ❶ to the front direction.
2) Remove the Slider FL Drive ❶ in the direction of arrow. (Refer to Fig. 5-13)
3) Remove the Gear FL cam ❷.

Note : When reinstalling be sure to reassemble Slider FL drive ❶ after you insert the Boss of Lever FL ARM-R in Groove of Slider Fl drive ❶.

Assembly : Align the Gear FL Cam ❶ with the Gear worm wheel Post as shown drawing.
(Refer to Timing point)

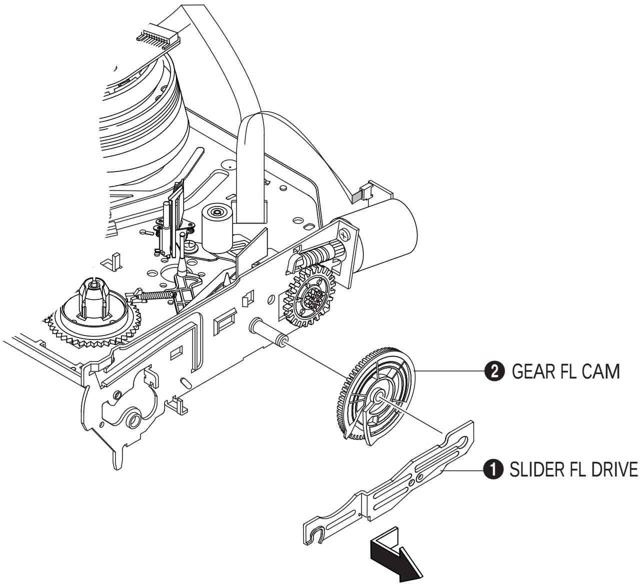

❷ GEAR FL CAM
❶ SLIDER FL DRIVE

Fig. 5-14 Slider FL Drive Removal

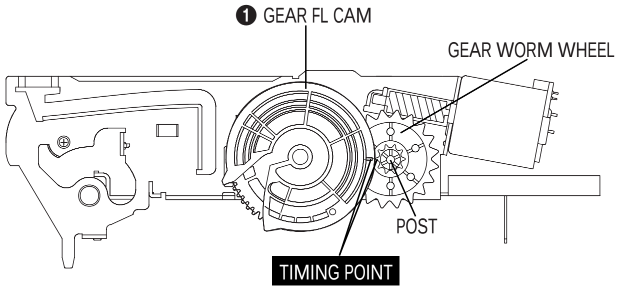

❶ GEAR FL CAM
GEAR WORM WHEEL
POST
TIMING POINT

Fig. 5-15 Gear FL Cam, Gear Worm

5-4-5 Gear Worm Wheel Removal

1) Remove the Gear Worm wheel ❶.

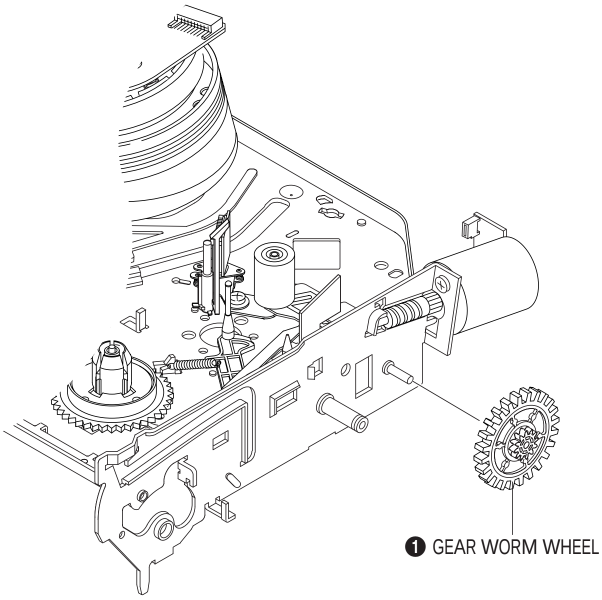

❶ GEAR WORM WHEEL

Fig. 5-16 Gear Worm Wheel Removal

5-4-6 Cable Flat Removal

1) Remove the Drum connecting part of Cable Flat ❶ from Connector Waffer ❷.
2) Remove the Loading Motor connecting part of Cable Flat ❶ from Connector Waffer ❸.

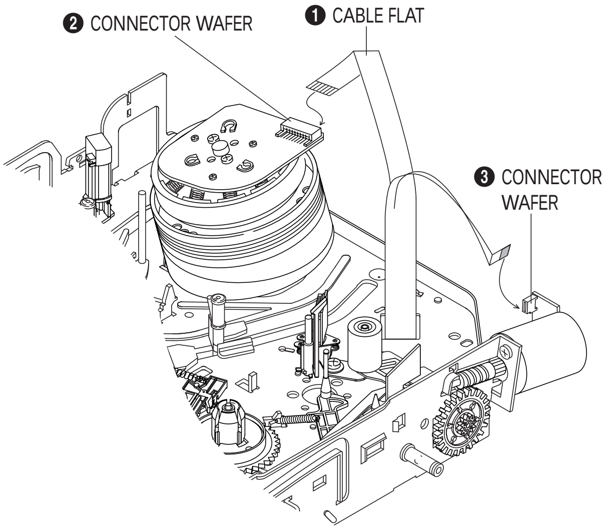

❷ CONNECTOR WAFER
❶ CABLE FLAT
❸ CONNECTOR WAFER

Fig. 5-17 Cable Flat Removal

5-4-7 Motor Loading Ass’y Removal

1) Remove the screw ❶.
2) Remove the Motor Loading Ass’y ❷.

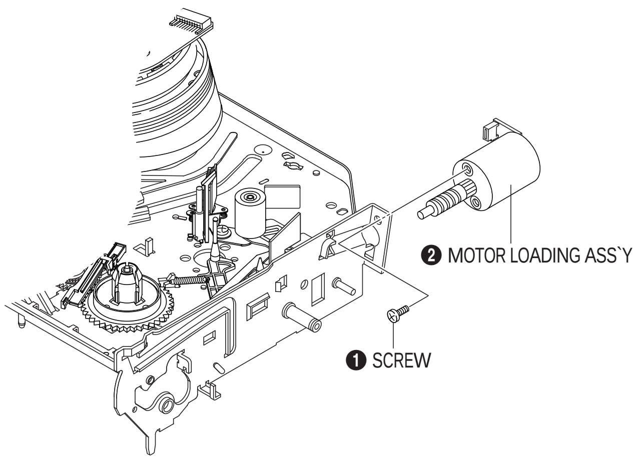

❷ MOTOR LOADING ASS`Y
❶ SCREW

Fig. 5-18 Motor Loading Ass’y Removal

5-4-8 Bracket Gear, Gear Joint 2, 1 Removal

1) Remove the SCREW ❶.
2) Remove the Bracket Gear ❷.
3) Remove the Gear Joint 2 ❸.
4) Remove the Gear Joint 1 ❹.

Assembly :
1) Be sure to align dot mark of Gear Joint 1 ❶ with dot mark of Gear Joint 2 ❷ as shown Fig 5-20. (Refer to Timing point1)
2) Confirm the Timing Point 2 of the Gear Joint 2 ❷ and Slider Cam ❸.

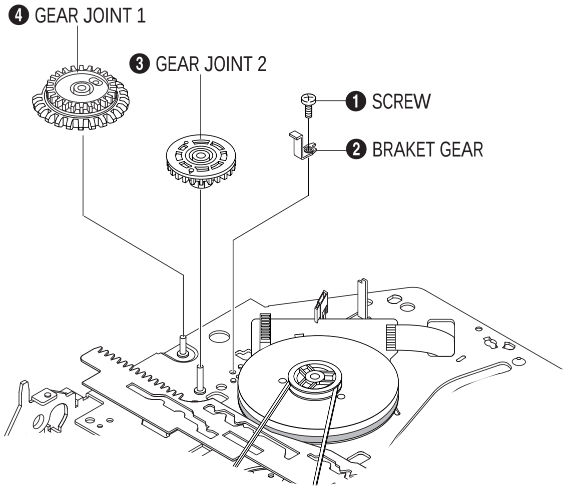

❹ GEAR JOINT 1
❸ GEAR JOINT 2
❶ SCREW
❷ BRAKET GEAR

Fig. 5-19 Bracket Gear, Gear Joint 1,2 Removal

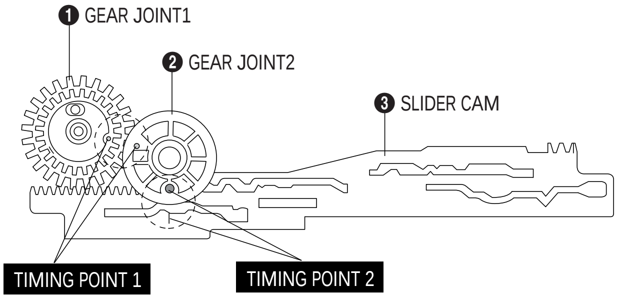

❶ GEAR JOINT1
❷ GEAR JOINT2
❸ SLIDER CAM
TIMING POINT 1
TIMING POINT 2

Fig. 5-20 Gear Joint 1,2 Assembly

5-4-9 Gear Loading Drive, Slider Cam, Lever Load S, T Ass’y Removal

1) Remove the Belt Pulley. (Refer to Fig. 5-38)
2) Remove the Gear Loading Drive ❶ after releasing Hook [A] in the direction arrow as shown in detail drawing.
3) Remove the Slider Cam ❷.
4) Remove the Lever Load S Ass’y ❸ & Lever Load T Ass’y ❹.

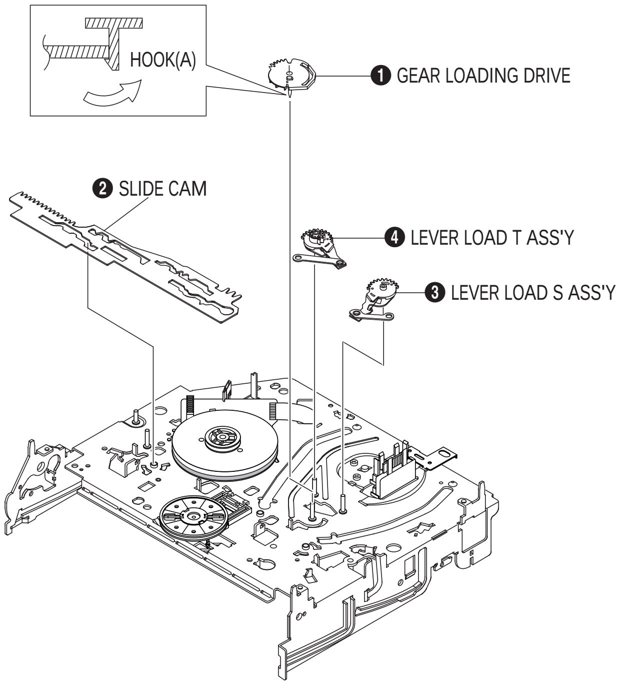

HOOK(A)
❶ GEAR LOADING DRIVE
❷ SLIDE CAM
❹ LEVER LOAD T ASS'Y
❸ LEVER LOAD S ASS'Y

Fig. 5-21 Gear Loading Drive, Slider Cam, Lever T, S Load Ass’y Removal

5-4-10 Gear Loading Drive, Slider Cam, Lever Load S, T Ass’y Assembly

1) When reinstalling, be sure to align dot of Lever Load T Ass'y ❶ with dot of Lever Load S Ass'y ❷ as shown in drawing, (Refer to Timing Point 1).
2) Insert the Pin A,B,C,D into the Slider Cam ❸ hole,
3) Be sure to align dot of Lever Load T ❶ and dot of Gear Loading Drive ❹, (Refer to Timing Point 2).
4) Aline dot of Gear Loading drive ❹ with mark of Slider Cam ❸ as shown in drawing(Refer to Timing Point 3).

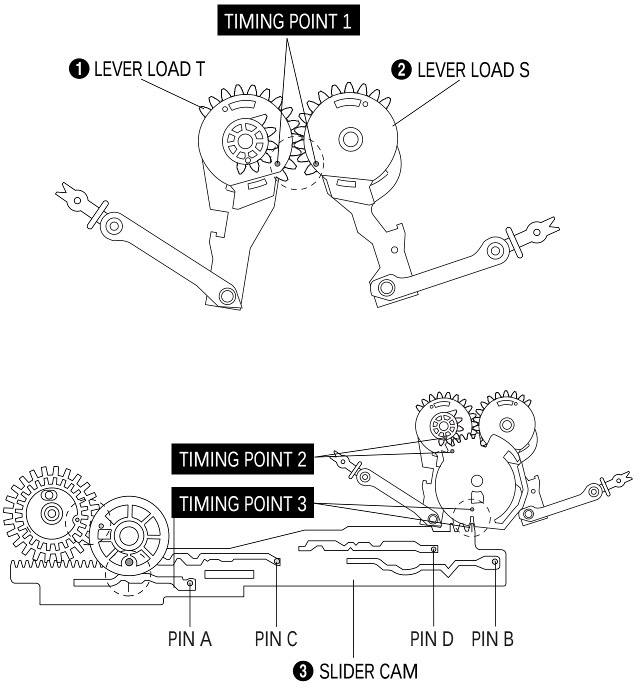

TIMING POINT 1
❶ LEVER LOAD T
❷ LEVER LOAD S
TIMING POINT 2
TIMING POINT 3
PIN A
PIN C
PIN D
PIN B
❸ SLIDER CAM

Fig. 5-22 Gear Loading Drive, Slider Cam, Lever Load S, T Ass’y Assembly

5-4-11 Lever Pinch Drive, Lever Tension Drive Removal

1) Remove the Lever Pinch Drive ❶, Lever Tension Drive ❷.

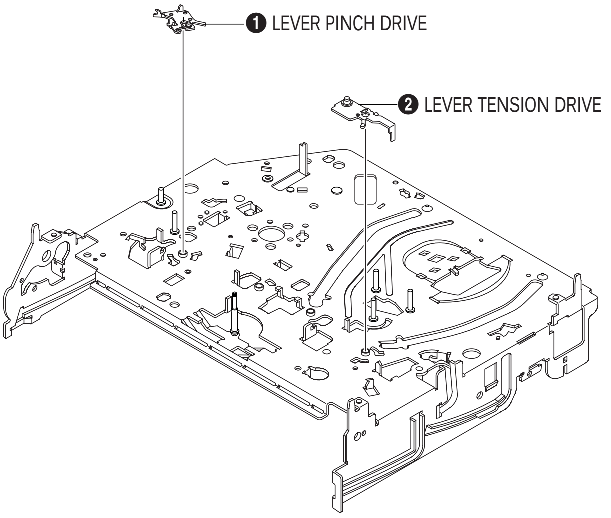

❶ LEVER PINCH DRIVE
❷ LEVER TENSION DRIVE

Fig. 5-23 Lever Pinch Drive,
Lever Tension Drive Removal

5-4-12 Lever Tension Ass’y, Band Brake Ass’y Removal

1) Remove the Lever Brake S Ass'y (Refer to Fig 5-25).
2) Remove the Spring Tension Lever ❶.
3) Rotate stopper of Main Base in the direction of arrow “A”.
4) Lift the Lever Tension Ass'y ❷ & Band brake Ass'y ❸.

Note :

1) When replacing the Lever Tension Ass'y ❷, be sure to apply Grease on the post,
2) Take care not to touch stain on the felt side, and not to be folder and broken Band brake Ass'y
3) After Lever Tension Ass'y seated, Rotate stopper of Main Base to the Mark[B].

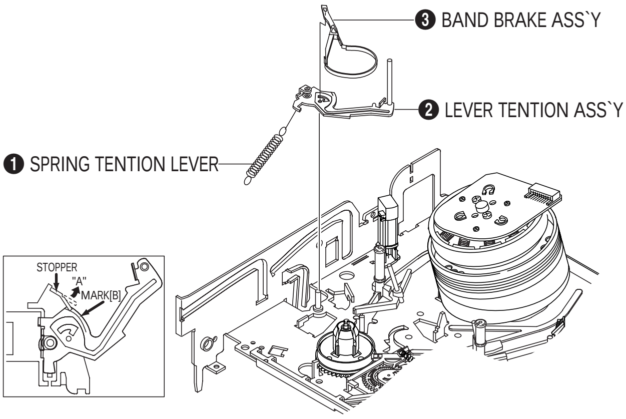

❸ BAND BRAKE ASS`Y
❷ LEVER TENTION ASS`Y
❶ SPRING TENTION LEVER
STOPPER
"A"
MARK[B]

Fig. 5-24 Lever Tension Ass’y,
Band Brake Ass’y Removal

5-4-13 Lever Brake S, T Ass’y Removal

1) Release the Hook [A] and the Hook [B], [C] in the direction of arrow as shown in Fig 5-25.
2) Lift the Lever S, T Brake Ass'y ❶, ❷ with spring brake ❸.

Assembly :

1)Assembly the Lever S Brake Ass'y ❶ on the Main Base.
2)Assembly the Lever T Brake Ass'y ❷ with spring brake ❸.

Note : Take extreme care not to be folded and transformed Spring Brake at removing or reinstalling.

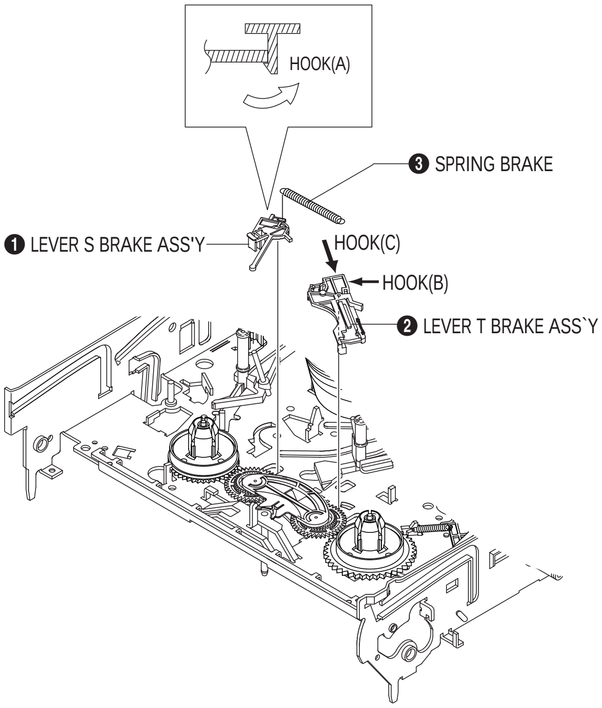

HOOK(A)
❸ SPRING BRAKE
❶ LEVER S BRAKE ASS'Y
HOOK(C)
HOOK(B)
❷ LEVER T BRAKE ASS`Y

Fig. 5-25 Lever Brake S, T Ass’y Removal

5-4-14 Gear Idle Ass’y Removal

1) Push the Lever Idle ❶ in the direction of arrow “A”, “B”.
2) Lift the Lever Idle ❶.

Assembly :

1) Apply oil in two Bosses of Lever Idle ❶.
2) Assemble the Gear Idle ❷ with the Lever Idle ❶.

Note : When replacing the Gear Idle ❷, be sure to add oil in the boss of Lever Idle ❶.

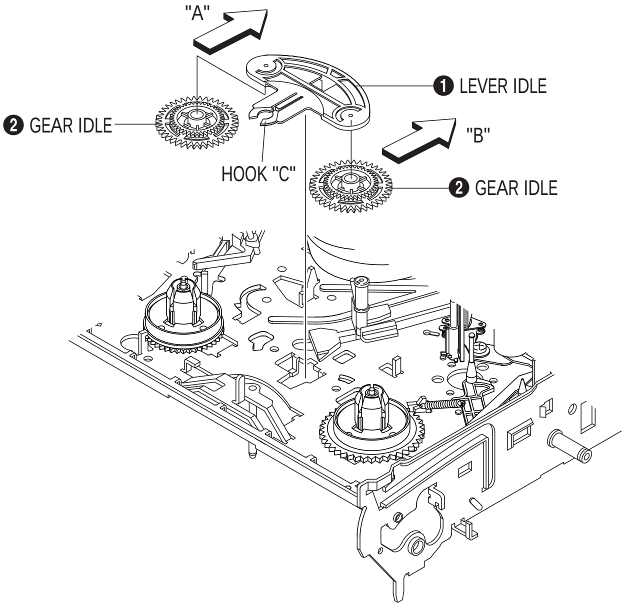

"A"
❶ LEVER IDLE
❷ GEAR IDLE
"B"
HOOK "C"
❷ GEAR IDLE

Fig. 5-26 Gear Idle Ass’y Removal

5-4-15 Disk S, T Reel Removal

1) Lift the Disk S, T Reel ❶, ❷.

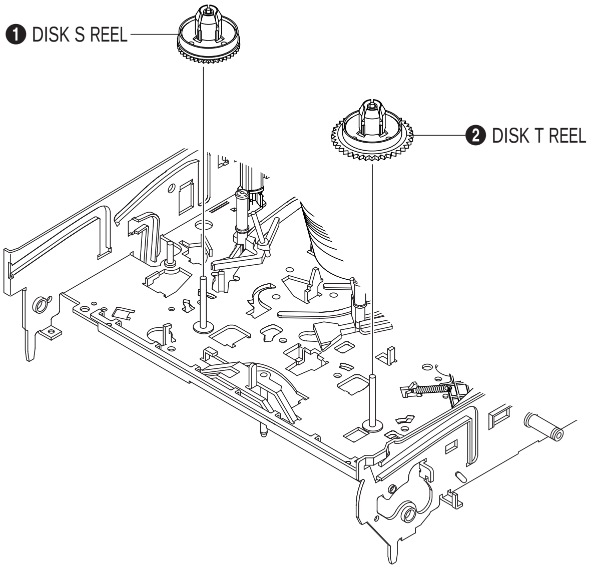

❶ DISK S REEL
❷ DISK T REEL

Fig. 5-27 Disk S, T Reel Removal

5-4-16 Holder Clutch Ass’y Removal

1) Remove the Washer Slit ❶.
2) Lift the Holder Clutch Ass’y ❷.

Note : When you reinstall Holder Clutch Ass'y
1) Check the condition of spring as shown in detail A.
2) Don't push Holder Clutch Ass'y down with excessive force Just insert Holder Clutch Ass'y into post center with dead force and Rotate it smoothly.
Be sure to confirm that spring is in the slit of Gear Center Ass'y as shown in detail B.

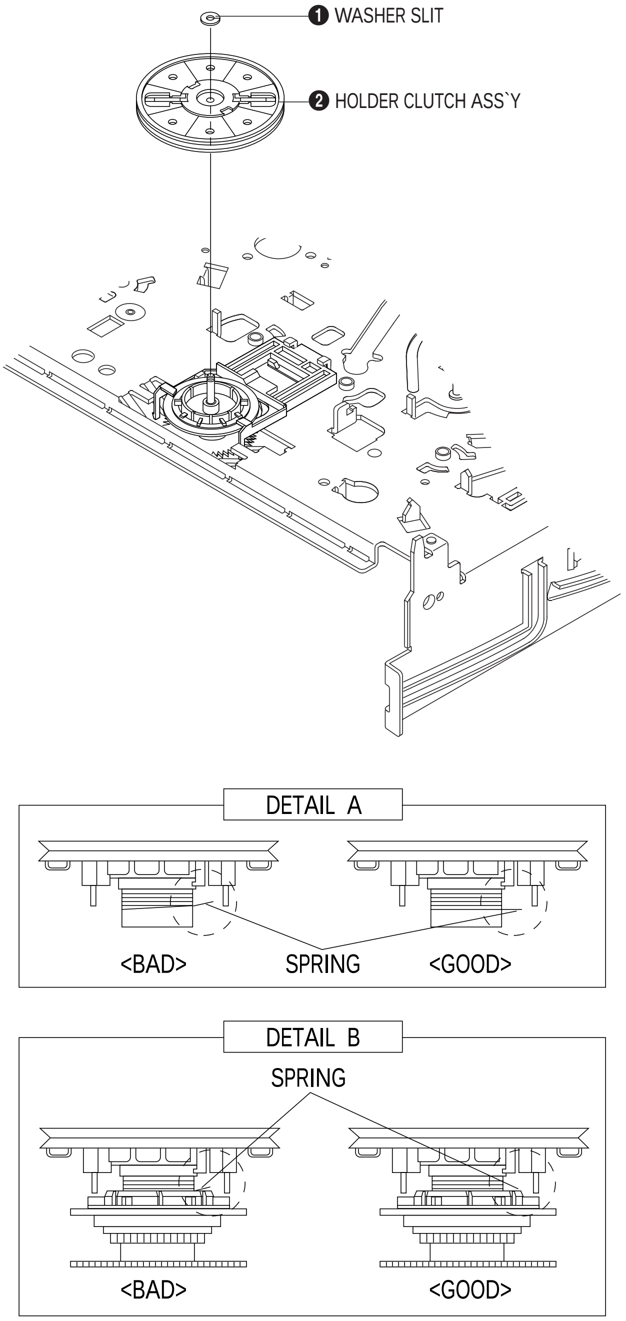

❶ WASHER SLIT
❷ HOLDER CLUTCH ASS`Y
DETAIL A
<BAD>
SPRING
<GOOD>
DETAIL B
SPRING
<BAD>
<GOOD>

Fig. 5-28 Holder Clutch Ass’y Removal

5-4-17 Lever Up Down Ass’y, Gear Center Ass’y Removal

1) Remove the 2 hooks in the direction of arrow as shown Fig. 5-28 and lift the Lever Up Down Ass’y ❶.
2) Lift the Gear Center Ass’y ❷.

Assembly :
1) Insert the Lever Up Down Ass'y ❶ in the rectangular holes on Main Base as shown in Fig 5-30.
2) Lift the Lever Up Down Ass'y ❶ about 35°. (Refer to Fig 5-30)
3) Insert Ring of the Gear Center Ass'y ❷ in the Guide of the Lever Up Down Ass'y ❶.
4) Insert the Gear Center Ass'y ❷ in the post on Main Base.
5) Push down the Lever Up Down Ass'y ❶ for locking of the Hook.

Note :
1) Take care not to separate and sentence does not mark sense.
2) Be sure to confirm that Ring of the Gear Center Ass'y ❷ is in the Guide of the Lever Up Down Ass'y ❶ after finishing assembly of Lever Up Down Ass'y ❶ and Gear Center Ass'y ❷.

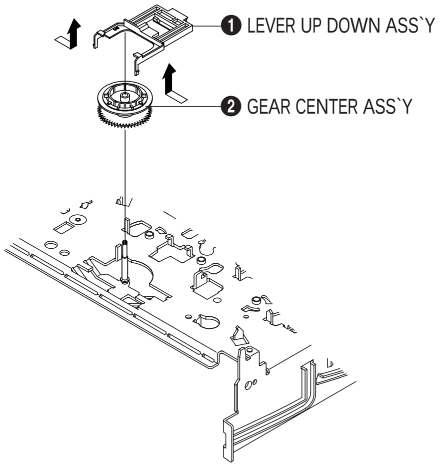

❶ LEVER UP DOWN ASS`Y
❷ GEAR CENTER ASS`Y

Fig. 5-29 Lever Up Down Ass’y Removal

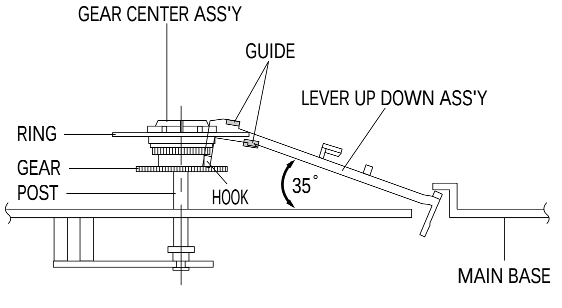

GEAR CENTER ASS'Y
GUIDE
LEVER UP DOWN ASS'Y
RING
GEAR
POST
HOOK
35°
MAIN BASE

Fig. 5-30 Lever Up Down Ass’y Removal

4-4-18 Guide Cassette Door Removal

1) Lift the Hook [A].
2) Rotate the Guide Cassette Door ❶ in the direction of arrow.

Note : After reinstalling the Guide Cassette Door ❶ sure the Hook [A].

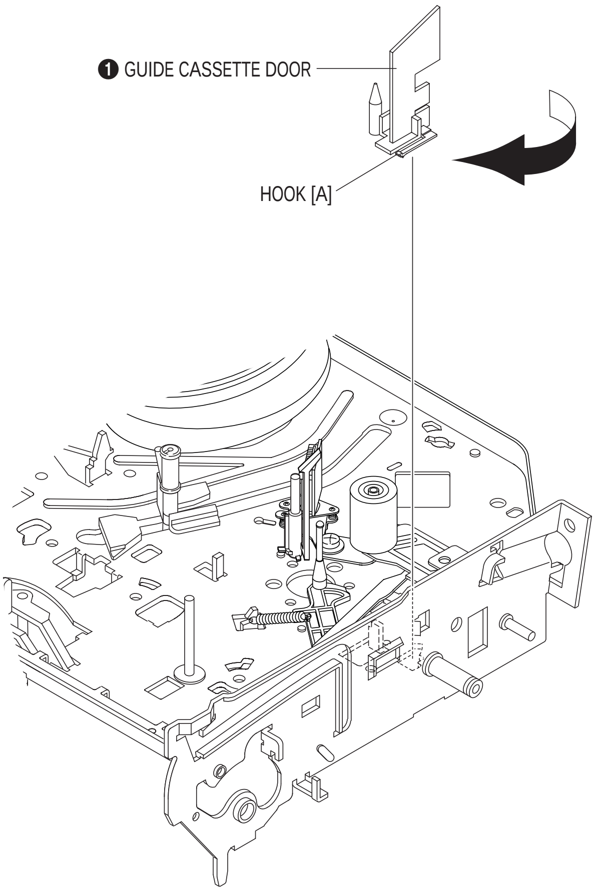

❶ GUIDE CASSETTE DOOR
HOOK [A]

Fig. 5-31 Guide Cassette Door Removal

5-4-19 Lever Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

1) Lift the Unit Pinch Ass'y ❶.
2) Remove the Plate Joint ❷ from Lever Pinch Drive.
3) Remove the Spring Pinch Drive ❸.

Note :
1) Take extreme care not to touch the grease on the Roller Pinch.
2) When reinstalling, be sure to apply grease on the post pinch roller.

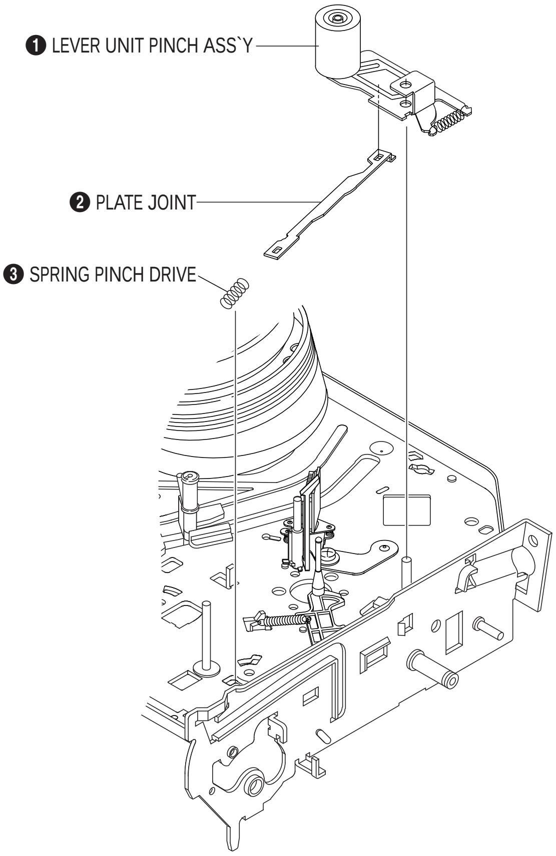

❶ LEVER UNIT PINCH ASS`Y
❷ PLATE JOINT
❸ SPRING PINCH DRIVE

Fig. 5-32 Lever Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

5-4-20 Lever #9 Guide Ass'y Removal

1) Remove the Spring #9 Guide ❶.
2) Lift the Spring #9 Guide Ass'y ❷ in the direction of arrow "A".

Note :
1) Take extreme care not to get grease on the tape Guide Post.
2) After reinstalling, check the bottom side of the Post #9 Guide to the top side of Main Base.

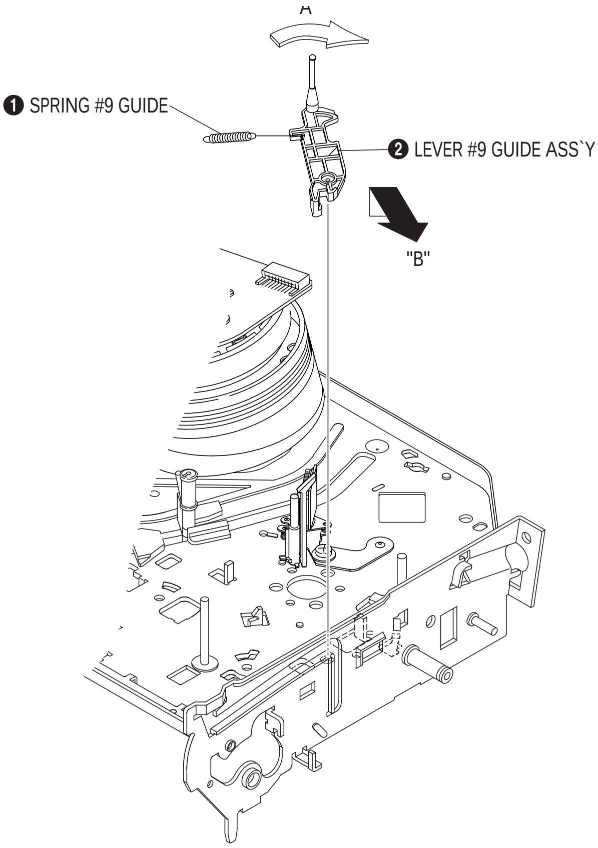

A
❶ SPRING #9 GUIDE
❷ LEVER #9 GUIDE ASS`Y
"B"

Fig. 5-33 Lever #9 Guide Ass'y Removal

5-4-21 FE Head Removal

1) Remove the screw ❶.
2) Lift the FE Head ❷.

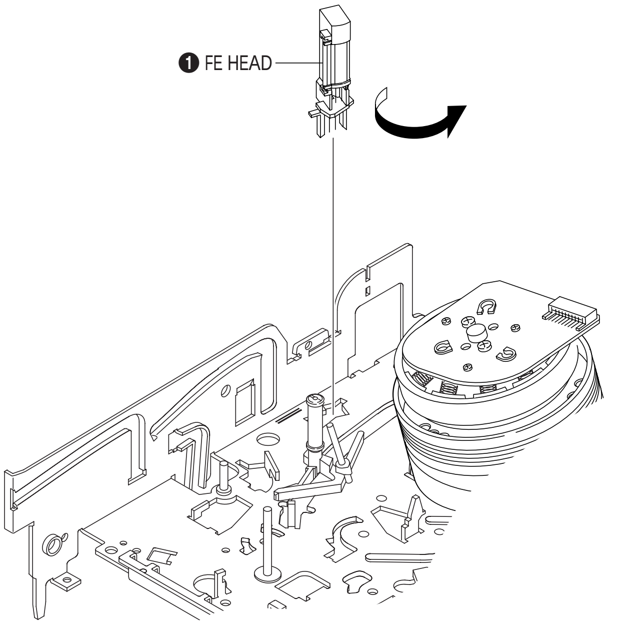


Fig. 5-34 FE Head Removal

5-4-22 ACE Head Removal

1) Pull out the FPC from connector of ACE Head Ass'y ❷.
2) Remove the screw ❶.
3) Lift the ACE Head Ass'y ❷.

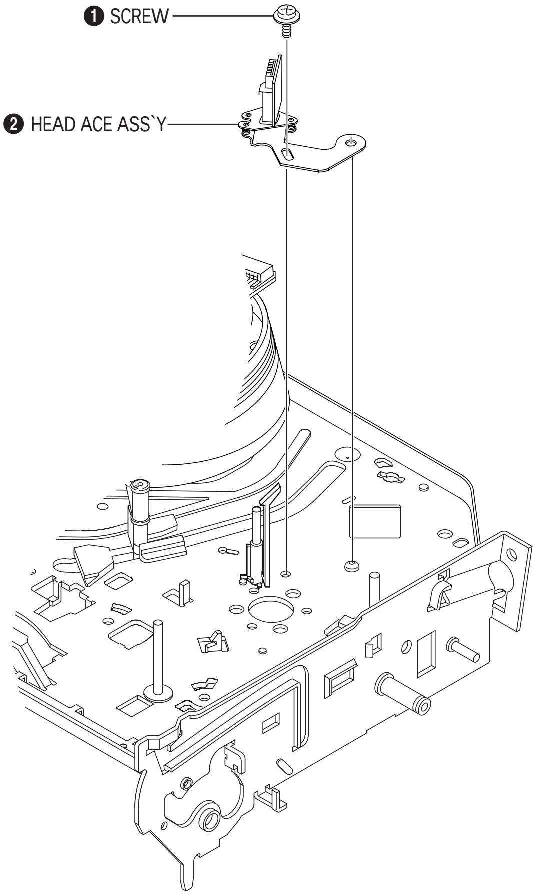

❶ SCREW
❷ HEAD ACE ASS`Y

Fig. 5-35 ACE Head Removal

5-4-23 Slider S, T Ass’y Removal

1) Move the Slider S, T Ass’y ❶, ❷ to slot, and then lift it to remove. (Refer to arrow)

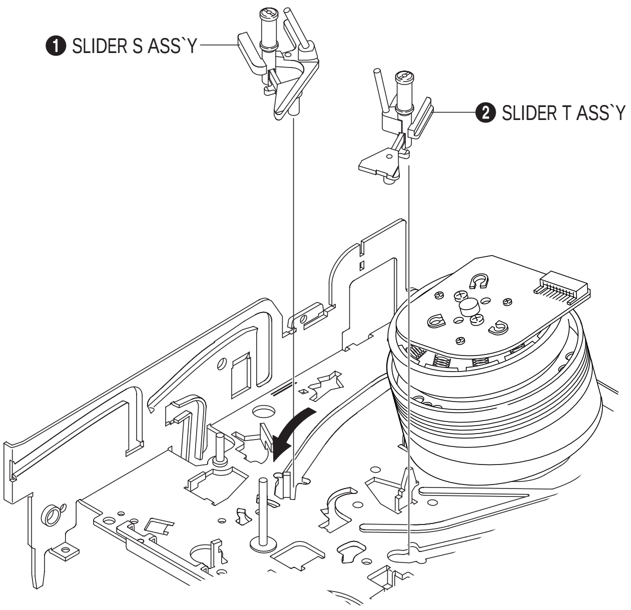


Fig. 5-36 Slider S, T Ass’y Removal

5-4-24 Plate Ground Deck, Cylinder Ass’y Removal

1) Remove the 3 Screws ❶.
2) Lift the Plate Ground Deck ❷.
3) Lift the Cylinder Ass’y ❸.

Assembly :

1) Match the 3 holes in the bottom of Cylinder ass'y ❸ to the 3 holes of Main Base as attending not to drop or knock the Cylinder ass'y ❸.
2) Tighten the 1 Screw ❶.
3) Match the Plate Ground Deck ❷ to the Hole of Base Main.
4) Tighten the other 2 Screws ❶.

Note :

1) Take care not to touch the Cylinder Ass'y ❸ and the tape guide post at reinstalling.
2) When reinstalling, Don't push down too much on Screw Driver.

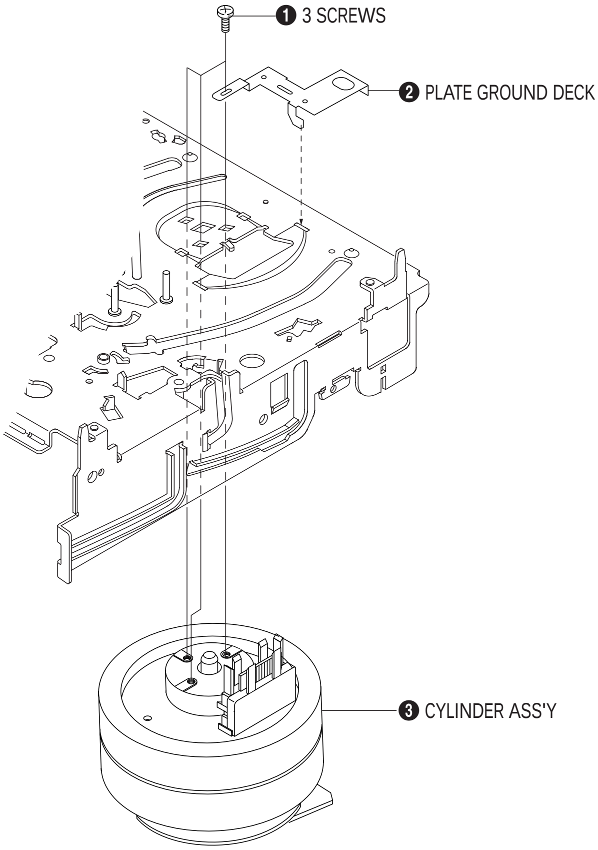


Fig. 5-37 Plate Ground Deck, Cylinder Ass’y Removal

5-4-25 Hook Capstan, Belt Pulley Removal

1) Remove the Hook Capstan ❶ after realeasing Hook in the direction arrow as shown in detail drawing.
2) Remove the Belt Pulley ❷.

Note : Take extreme care not to get grease on Belt Pulley ❷ at assembling or reassembling.

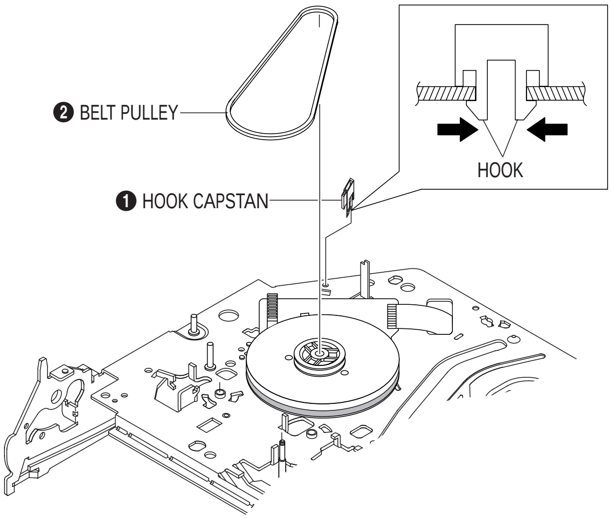


Fig. 5-38 Hook Capstan, Belt Pulley Removal

5-4-26 Motor Capstan Ass’y Removal

1) Remove the Damper Capstan ❶ in the direction of arrow.
2) Remove the 3 Screws ❷.
3) Remove the Motor Capstan Ass’y ❸.

Assembly :

1) Match the 3 holes of Motor Capstan Ass’y ❸ to the 3 holes of Main Base. Be careful not to drop or knock the Motor Capstan Ass'y ❸.
2) Tighten the 3 Screws ❷ in the direction of arrow as shown detail drawing.
3) Assemble the Damper Capstan ❶.

Note : After tightening screws, check if there is gap between the head of screws and the top side of Main Base. There should have no gap between the head of screws and the top side of Main Base.
After reinstalling, adjusting the tape transport system again.

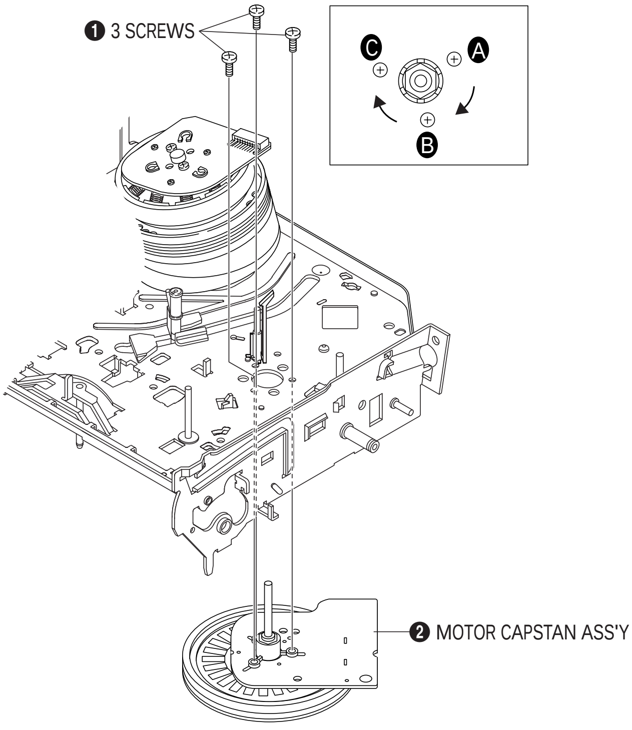


Fig. 5-39 Motor Capstan Ass’y Removal

5-4-27 Post #8 Guide Ass’y Removal

1) Rotate the Post #8 Guide Ass’y ❶ in the direction of arrow to lift up.

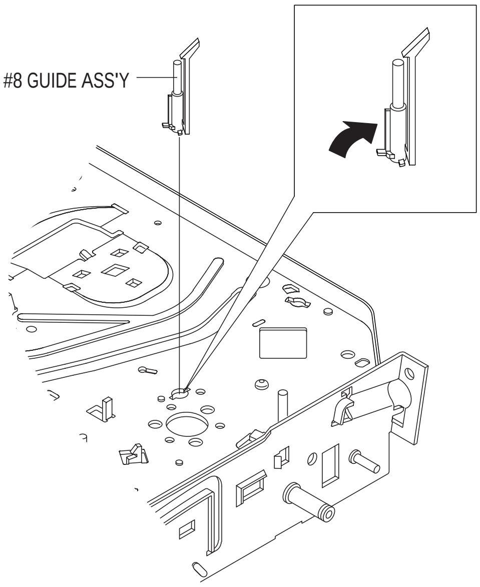


Fig. 5-40 Post #8 Guide Ass’y Removal

5-4-28 Level Head Cleaner Ass’y Removal (Optional)

1) Release the Hook ❶.
2) Lift the Lever Head Cleaner Ass’y ❷.

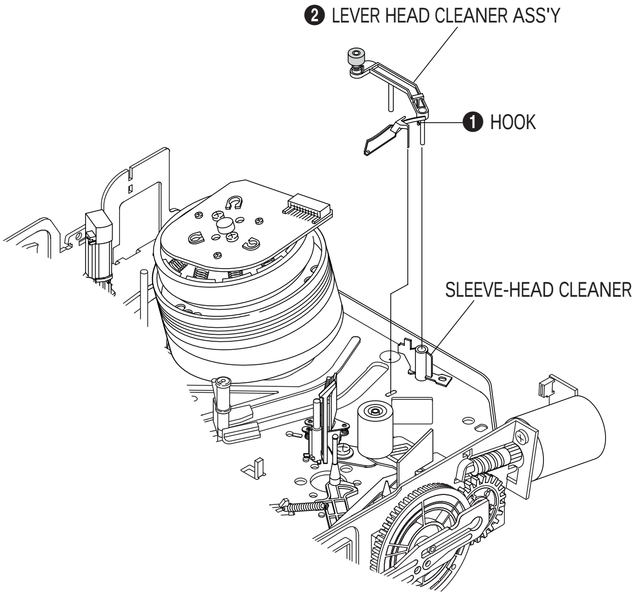


Fig. 5-41 Lever Head Cleaner Ass’y Removal

5-4-29 How to Eject the Cassette Tape (If the unit does not operate on condition that is inserted into housing ass’y)

1) Turn the Gear worm ❶ clockwise with screw driver.(Refer to arrow) (Other method : Remove the Screw of Motor Load Ass'y, Separate the Motor Load Ass'y)

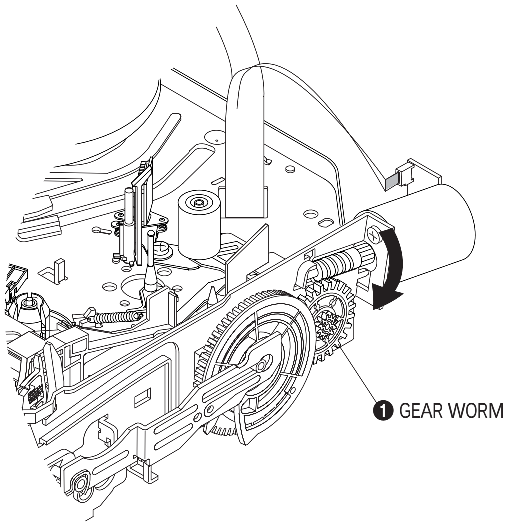


Fig. 5-42

2) When Slider S,T are approched in the position of unloading, rotate holder Clutch counterclockwise after inserting screw driver in the hole of frame's bottom in order to wind the unwinded tape. (Refer to Fig.5-43)
   (If you rotate Gear Worm ❶ continuously when tape is in state of unwinding, you may cause a tape contamination by grease and tape damage. Be sure to wind the unwinded tape in the state of set horizently.)
3) Rotate Gear Worm ❶ clockwise using screw driver again up to the state of eject mode and then pick out the tape.(Refer to Fig.5-42)

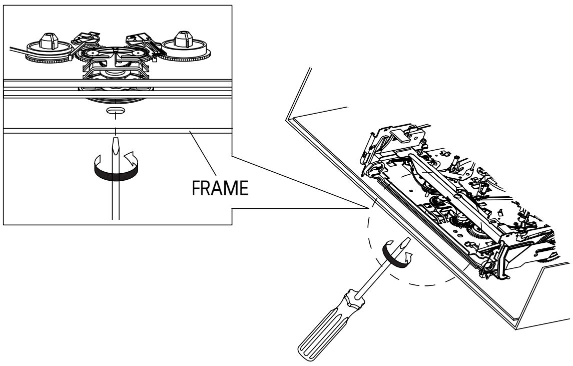


Fig. 5-43

5-5 The table of cleaning, Lubrication and replacement time about principal parts

1) The replacement time of parts is not life of parts.
2) The table 5-1 is that the VCR Set is in normal condition (normal temperature, normal humidity).
   The checking period may be changed owing to the condition of use, runtime and environmental conditions.
3) Life of the Cylinder Ass’y is depend on the condition of use.
4) See exploded view for location of each parts.

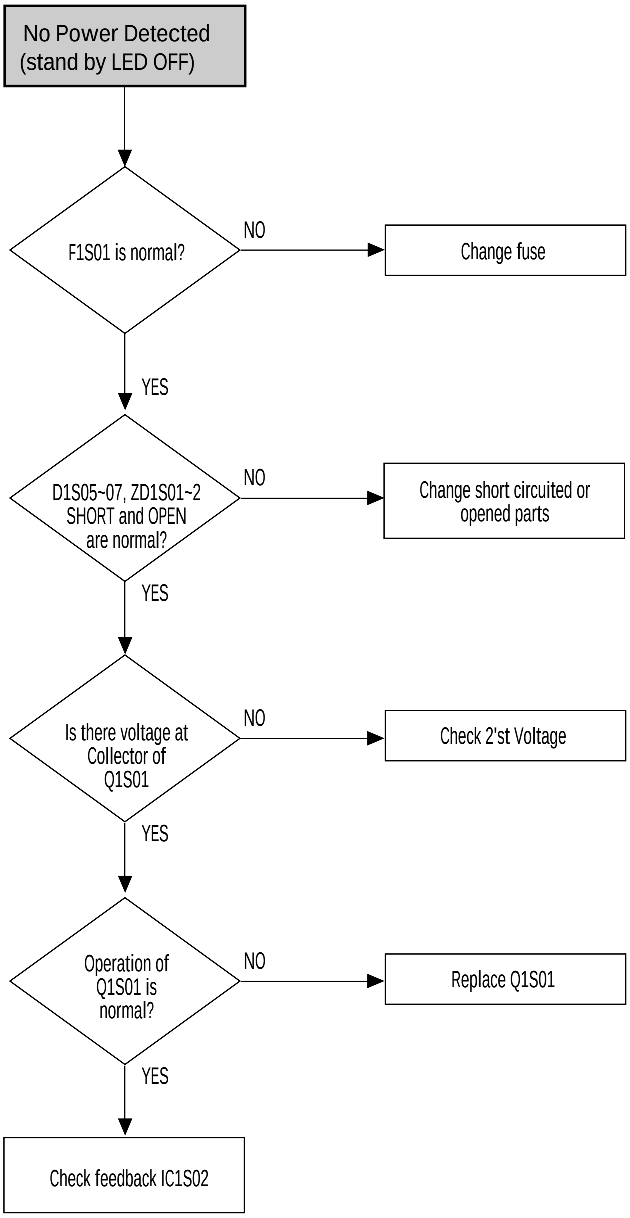
<Table 5-1>

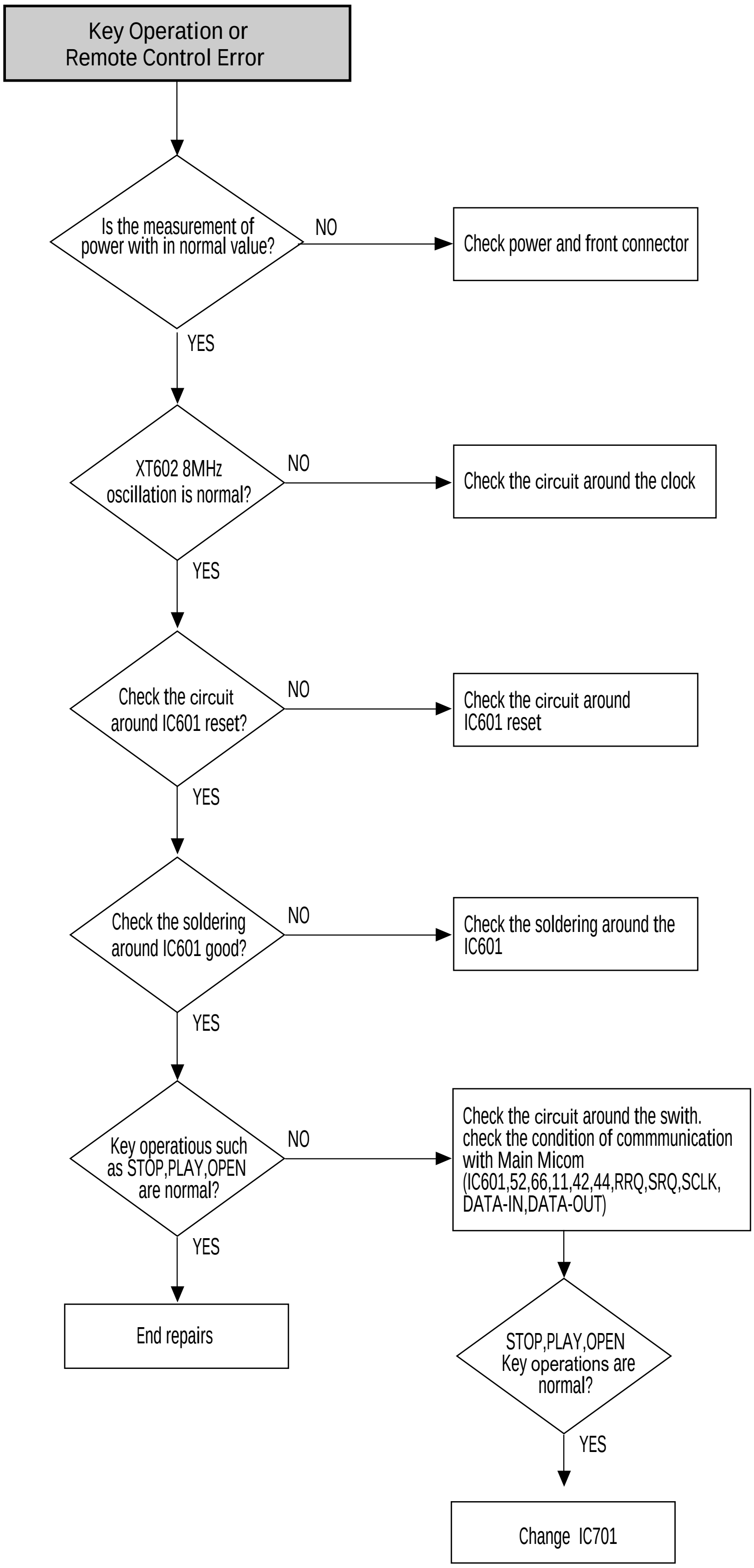
*	Parts Name	Checking Period										Remark
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
TAPE PATH SYSTEM	POST TENSION	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- To clean the parts, use patch and alcohol (solvent). - After cleaning, use the video tape after alcohol is gone away completely. - We recommend to use oil [EP-50] or solvent. - One or two drops of oil should be applied after cleaning with alcohol.
	SLANT POST S, T	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#8 GUIDE SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	CAPSTAN SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#9 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#3 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	GUIDE ROLLER S, T	Δ	Δ	Δ	O	O	O	O	O	O	O	
	CYLINDER ASS’Y	Δ	O	O	O	O	O	O	O	O	O	
	FE HEAD	Δ	Δ	Δ	O	O	O	O	O	O	O	
	ACE HEAD	Δ	O	O	O	O	O	O	O	O	O	
	PINCH ROLLER	Δ	O	O	O	O	O	O	O	O	O	
	POST REEL S, T		◆		◆		◆		◆		◆	- Periodic time of applying oil (Apply oil after cleaning) - The excessive applying oil may be the cause of malfunction.
	SLEEVE TENSION		◆		◆		◆		◆		◆	
	POST CENTER		◆		◆		◆		◆		◆	
	LEVER IDLE BOSS (2Point)		◆		◆		◆		◆		◆	
DRIVING SYSTEM	CAPSTAN MOTOR PULLEY	Δ	Δ	Δ	Δ	Δ	O	O	O	O	O	
	BELT PULLEY				O	O	O	O	O	O	O	
	HOLDER CLUTCH ASS’Y	Δ	O	O	O	O	O	O	O	O	O	
	GEAR CENTER ASS’Y		O	O	O	O	O	O	O	O	O	
	GEAR IDLE (2Point)		O	O	O	O	O	O	O	O	O	
	LOADING MOTOR		O	O	O	O	O	O	O	O	O	
BRAKE SYSTEM	BAND BRAKE ASS’Y		O	O	O	O	O	O	O	O	O	
	BRAKE T ASS’Y		O	O	O	O	O	O	O	O	O	

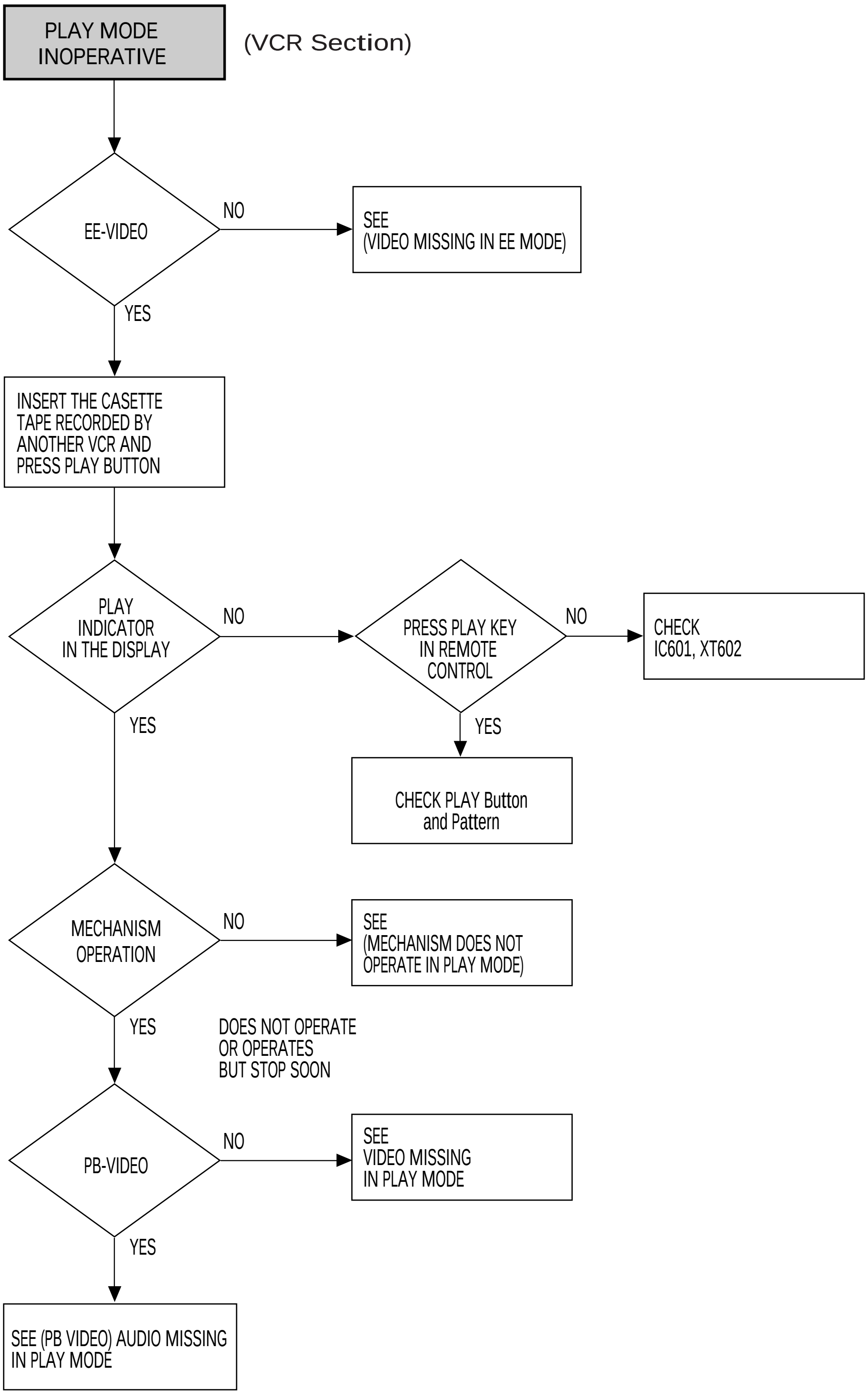
Δ : Cleaning   O : Check and replacement in necessary   ◆ : Add Oil

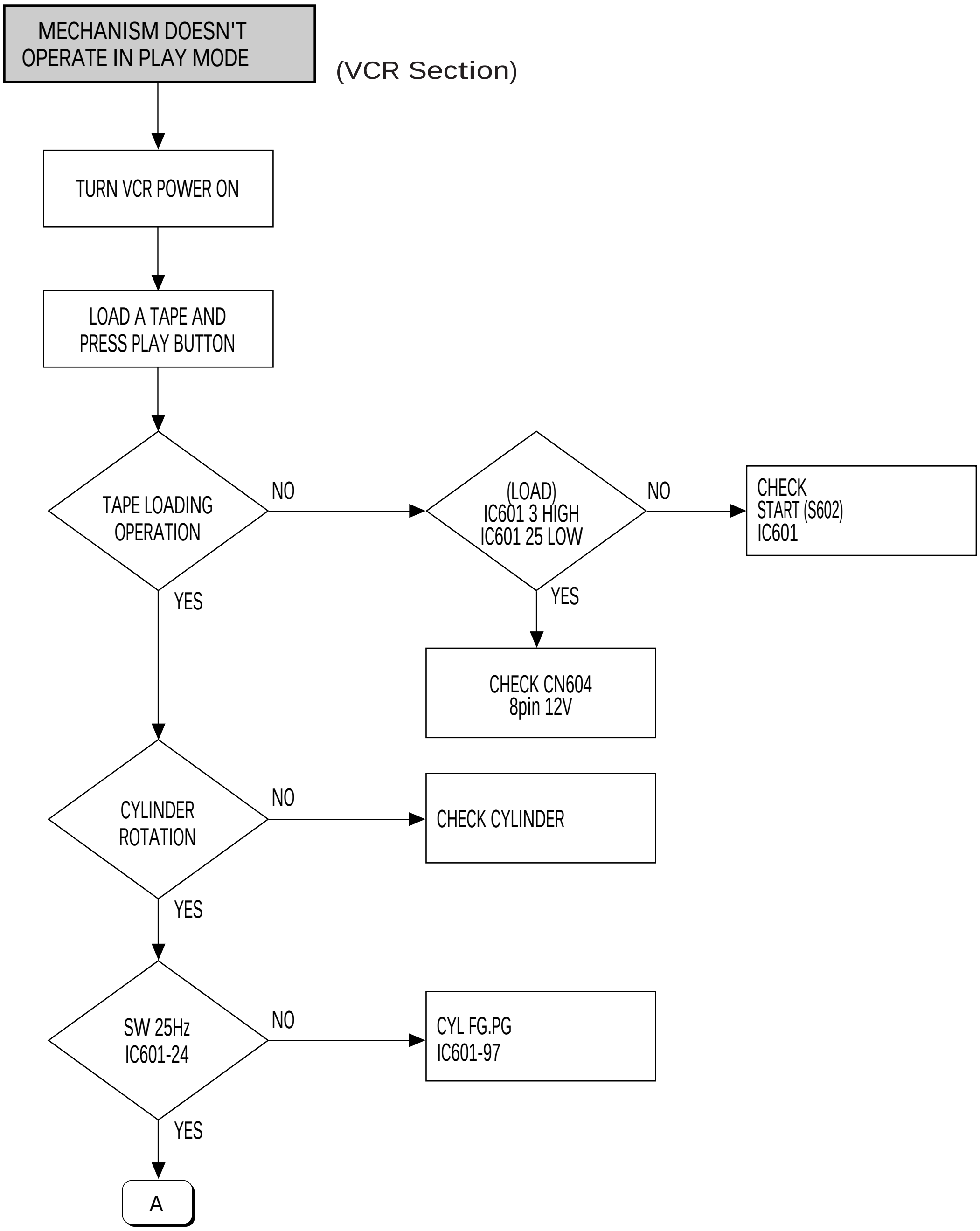
MEMO

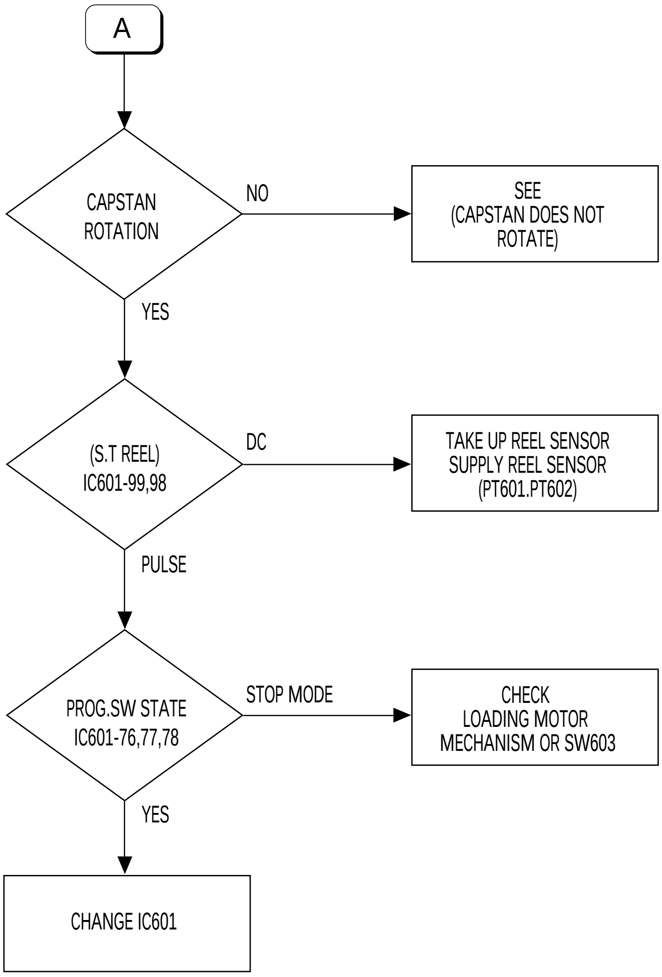
6. Troubleshooting

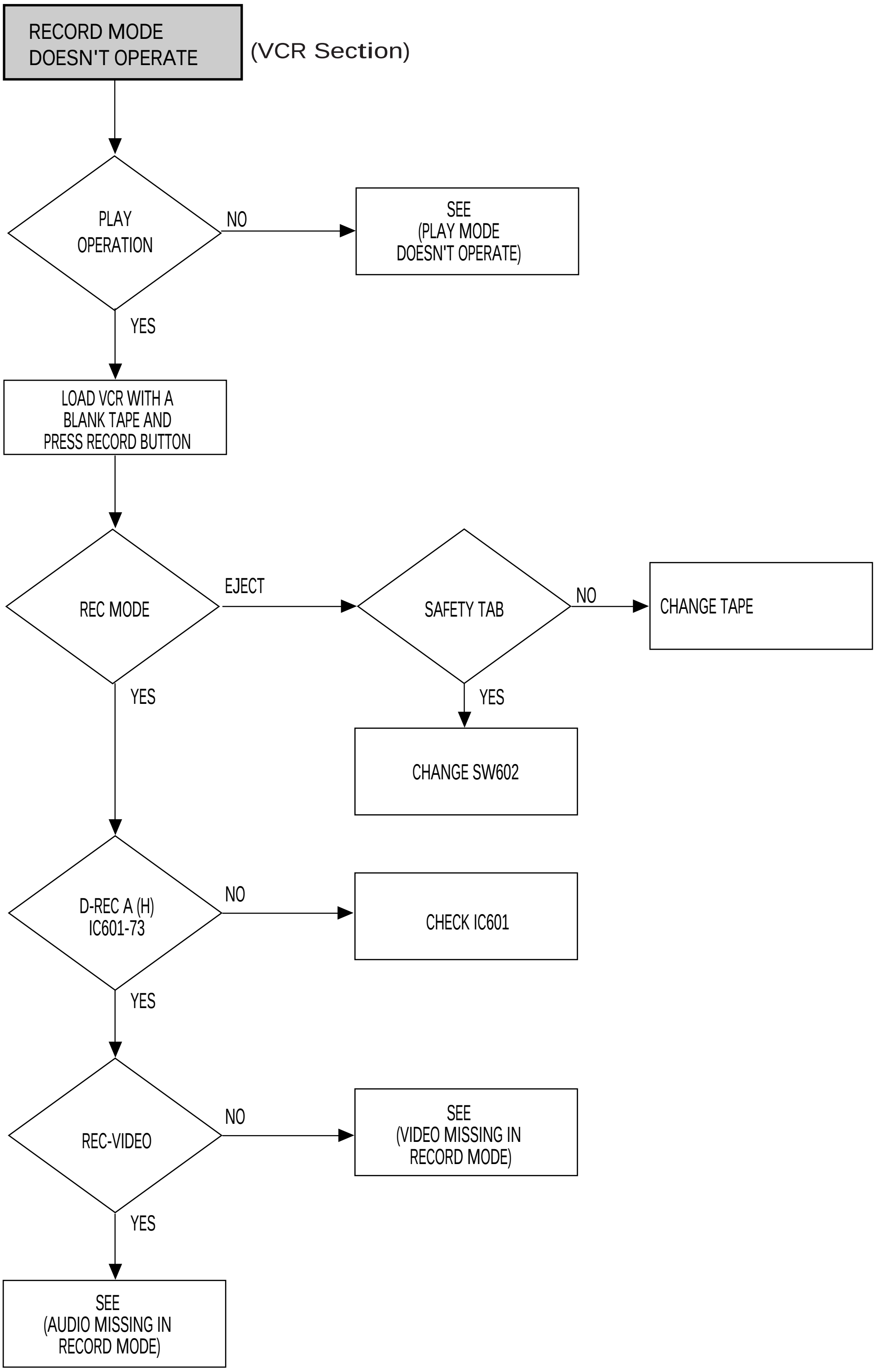

No Power Detected
(stand by LED OFF)
F1S01 is normal?
NO
Change fuse
YES
D1S05~07, ZD1S01~2 SHORT and OPEN are normal?
NO
Change short circuited or opened parts
YES
Is there voltage at Collector of Q1S01
NO
Check 2'st Voltage
YES
Operation of Q1S01 is normal?
NO
Replace Q1S01
YES
Check feedback IC1S02


Key Operation or
Remote Control Error
Is the measurement of
power with in normal value?
NO
Check power and front connector
YES
XT602 8MHz
oscillation is normal?
NO
Check the circuit around the clock
YES
Check the circuit
around IC601 reset?
NO
Check the circuit around
IC601 reset
YES
Check the soldering
around IC601 good?
NO
Check the soldering around the
IC601
YES
Key operatious such
as STOP,PLAY,OPEN
are normal?
NO
Check the circuit around the swith.
check the condition of commmunication
with Main Micom
(IC601,52,66,11,42,44,RRQ,SRQ,SCLK,
DATA-IN,DATA-OUT)
YES
End repairs
STOP,PLAY,OPEN
Key operations are
normal?
YES
Change IC701

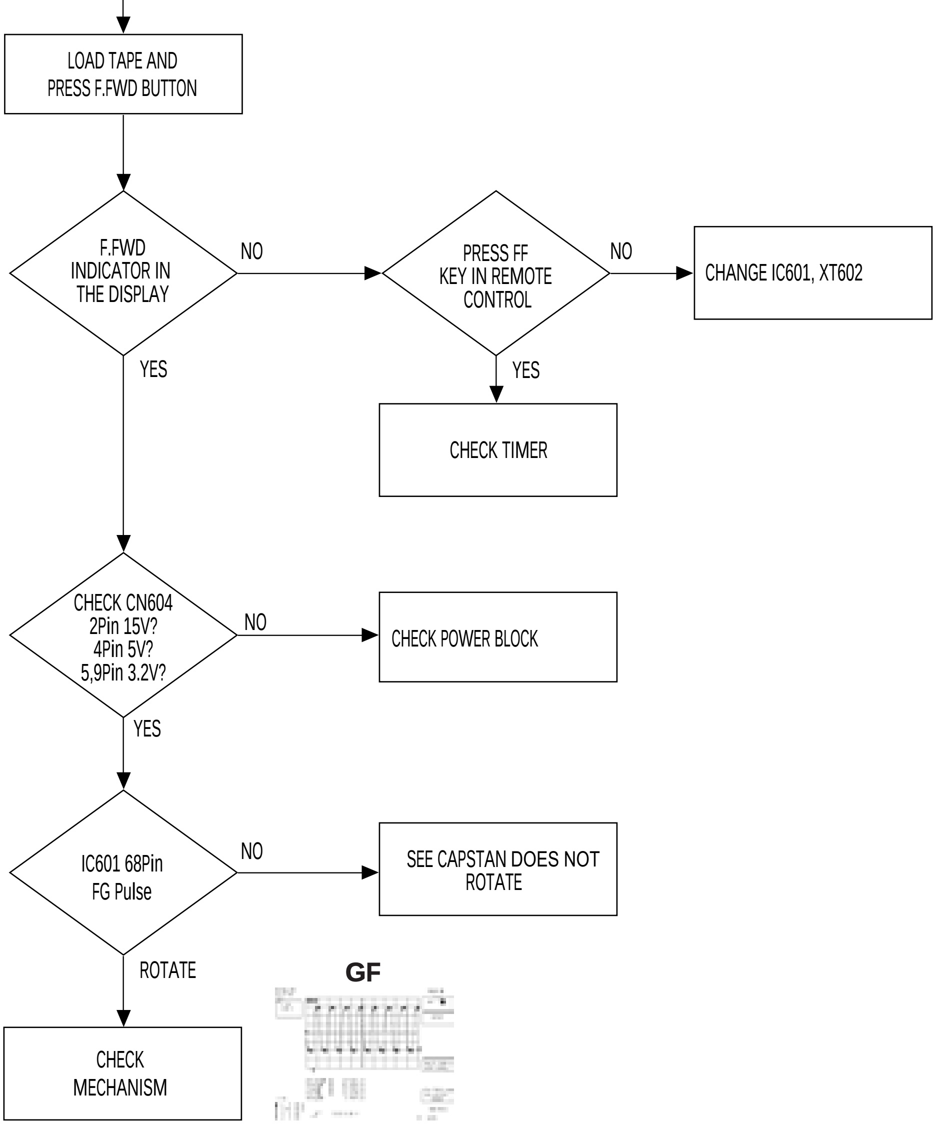

PLAY MODE
INOPERATIVE
(VCR Section)
EE-VIDEO
NO
SEE
(VIDEO MISSING IN EE MODE)
YES
INSERT THE CASETTE
TAPE RECORDED BY
ANOTHER VCR AND
PRESS PLAY BUTTON
PLAY
INDICATOR
IN THE DISPLAY
NO
PRESS PLAY KEY
IN REMOTE
CONTROL
NO
CHECK
IC601, XT602
YES
CHECK PLAY Button
and Pattern
YES
MECHANISM
OPERATION
NO
SEE
(MECHANISM DOES NOT
OPERATE IN PLAY MODE)
YES
DOES NOT OPERATE
OR OPERATES
BUT STOP SOON
PB-VIDEO
NO
SEE
VIDEO MISSING
IN PLAY MODE
YES
SEE (PB VIDEO) AUDIO MISSING
IN PLAY MODE

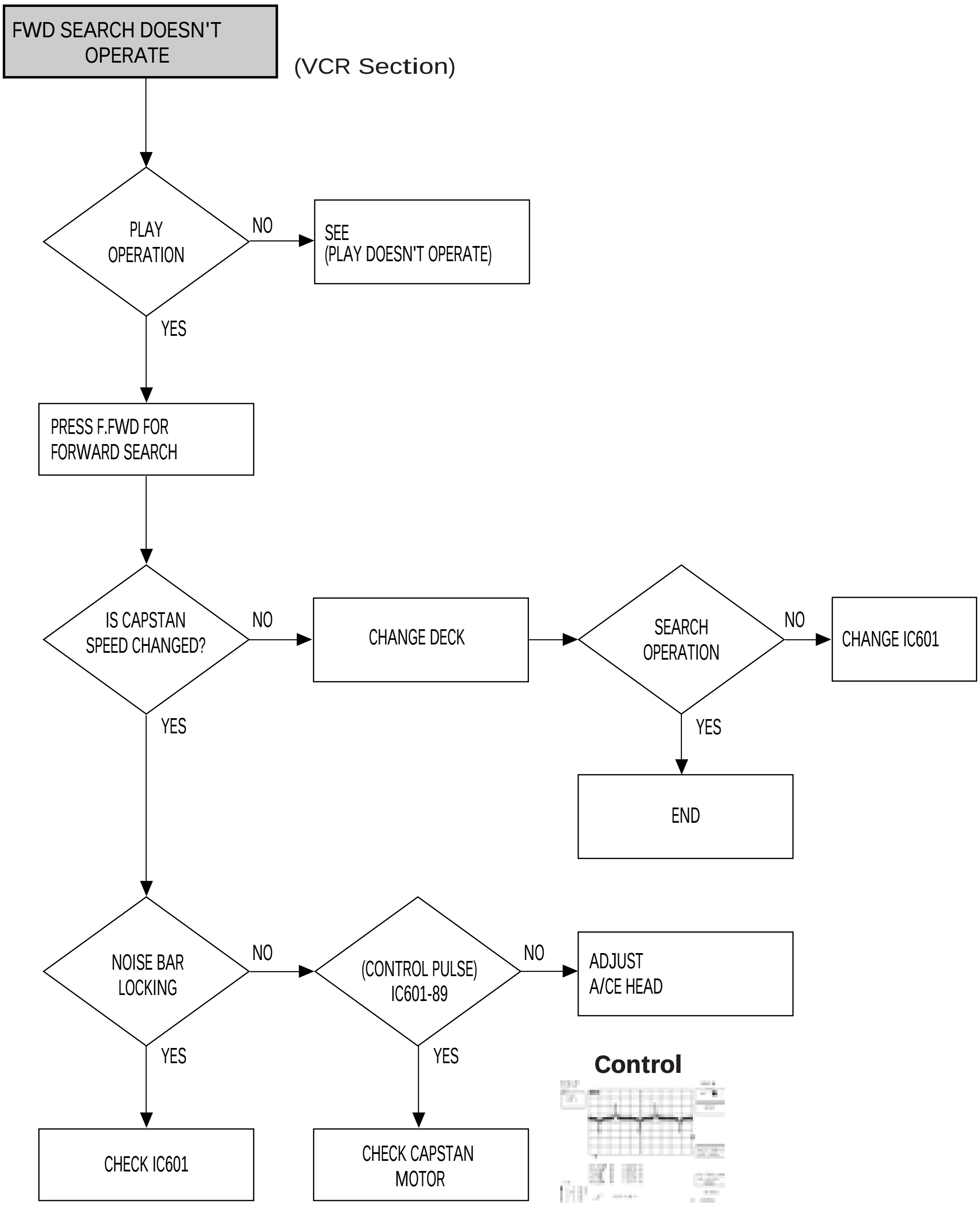

MECHANISM DOESN'T OPERATE IN PLAY MODE
(VCR Section)
TURN VCR POWER ON
LOAD A TAPE AND PRESS PLAY BUTTON
TAPE LOADING OPERATION
NO
(LOAD) IC601 3 HIGH IC601 25 LOW
NO
CHECK START (S602) IC601
YES
YES
CHECK CN604 8pin 12V
CYLINDER ROTATION
NO
CHECK CYLINDER
YES
SW 25Hz IC601-24
NO
CYL FG.PG IC601-97
YES
A

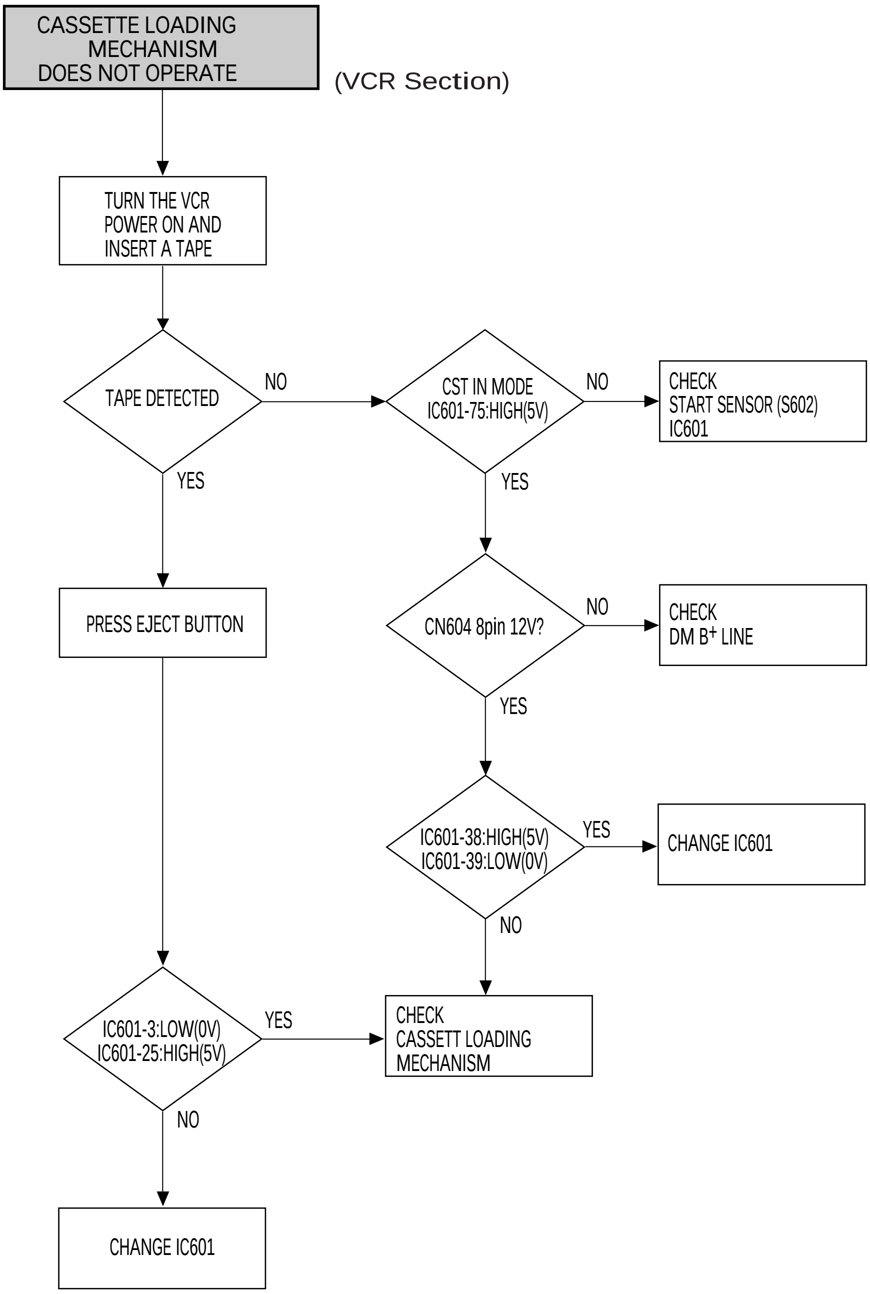

A
CAPSTAN ROTATION
NO
SEE (CAPSTAN DOES NOT ROTATE)
YES
(S.T REEL) IC601-99,98
DC
TAKE UP REEL SENSOR
SUPPLY REEL SENSOR
(PT601.PT602)
PULSE
PROG.SW STATE IC601-76,77,78
STOP MODE
CHECK LOADING MOTOR MECHANISM OR SW603
YES
CHANGE IC601

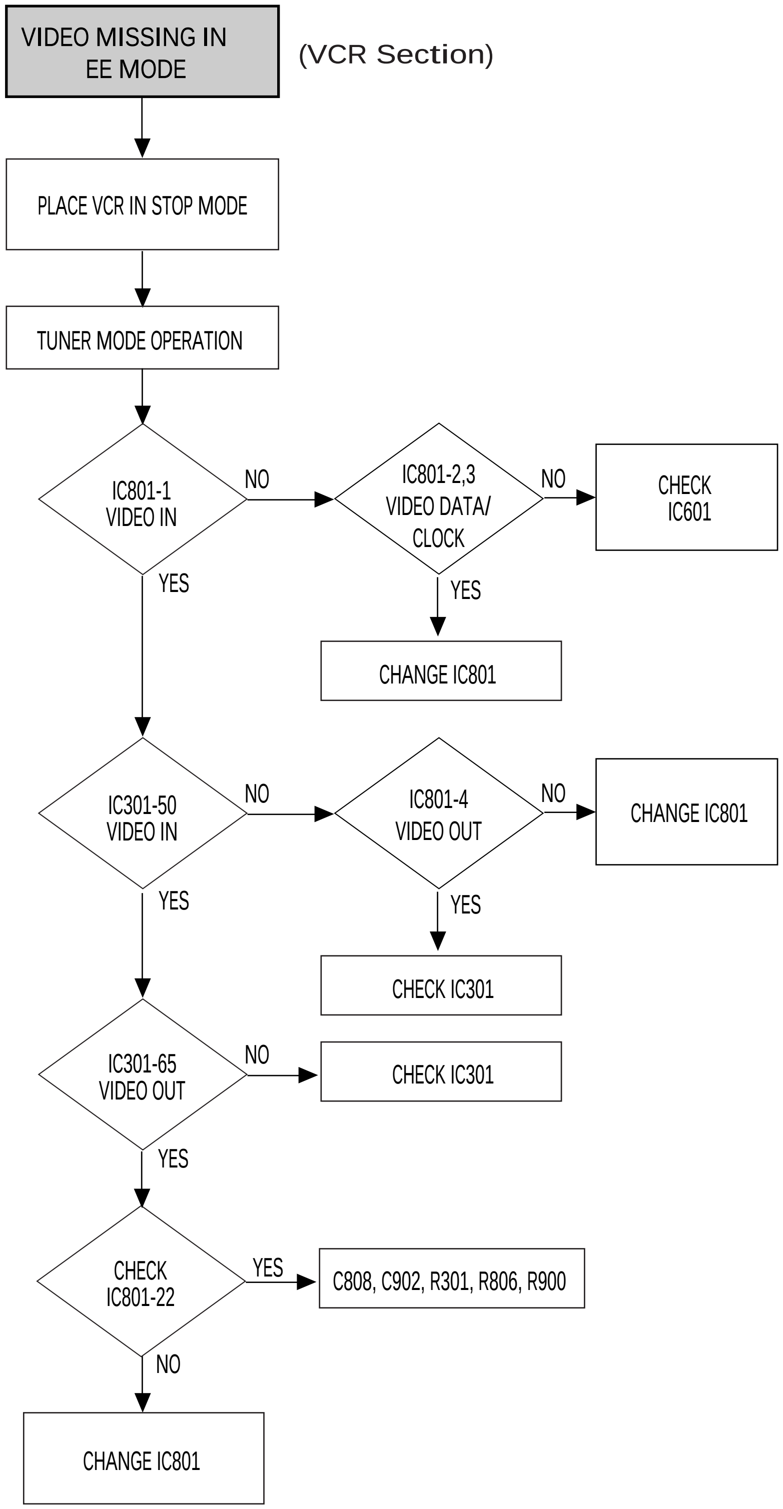

RECORD MODE DOESN'T OPERATE
(VCR Section)
PLAY OPERATION
NO
SEE (PLAY MODE DOESN'T OPERATE)
YES
LOAD VCR WITH A BLANK TAPE AND PRESS RECORD BUTTON
REC MODE
EJECT
SAFETY TAB
NO
CHANGE TAPE
YES
CHANGE SW602
YES
D-REC A (H) IC601-73
NO
CHECK IC601
YES
REC-VIDEO
NO
SEE (VIDEO MISSING IN RECORD MODE)
YES
SEE (AUDIO MISSING IN RECORD MODE)

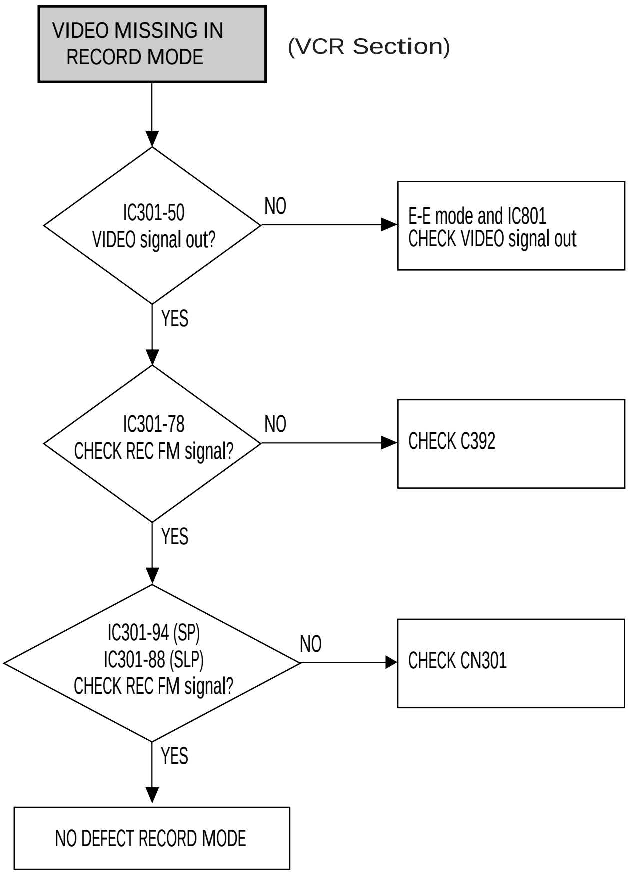
FAST FORWARD DOESN'T OPERATE (VCR Section)

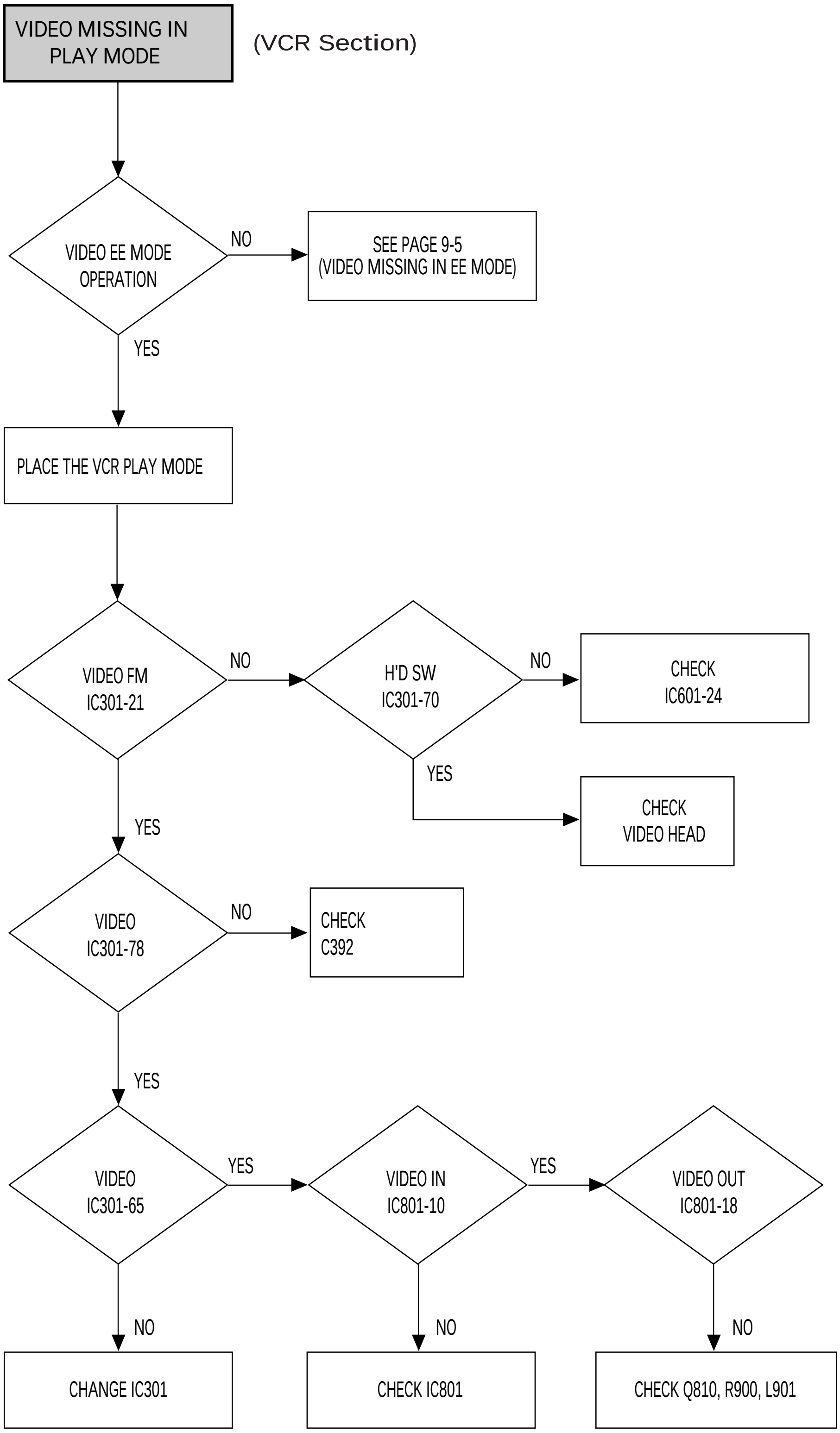

LOAD TAPE AND PRESS F.FWD BUTTON
F.FWD INDICATOR IN THE DISPLAY
NO
PRESS FF KEY IN REMOTE CONTROL
NO
CHANGE IC601, XT602
YES
YES
CHECK TIMER
CHECK CN604 2Pin 15V? 4Pin 5V? 5,9Pin 3.2V?
NO
CHECK POWER BLOCK
YES
IC601 68Pin FG Pulse
NO
SEE CAPSTAN DOES NOT ROTATE
ROTATE
GF
CHECK MECHANISM

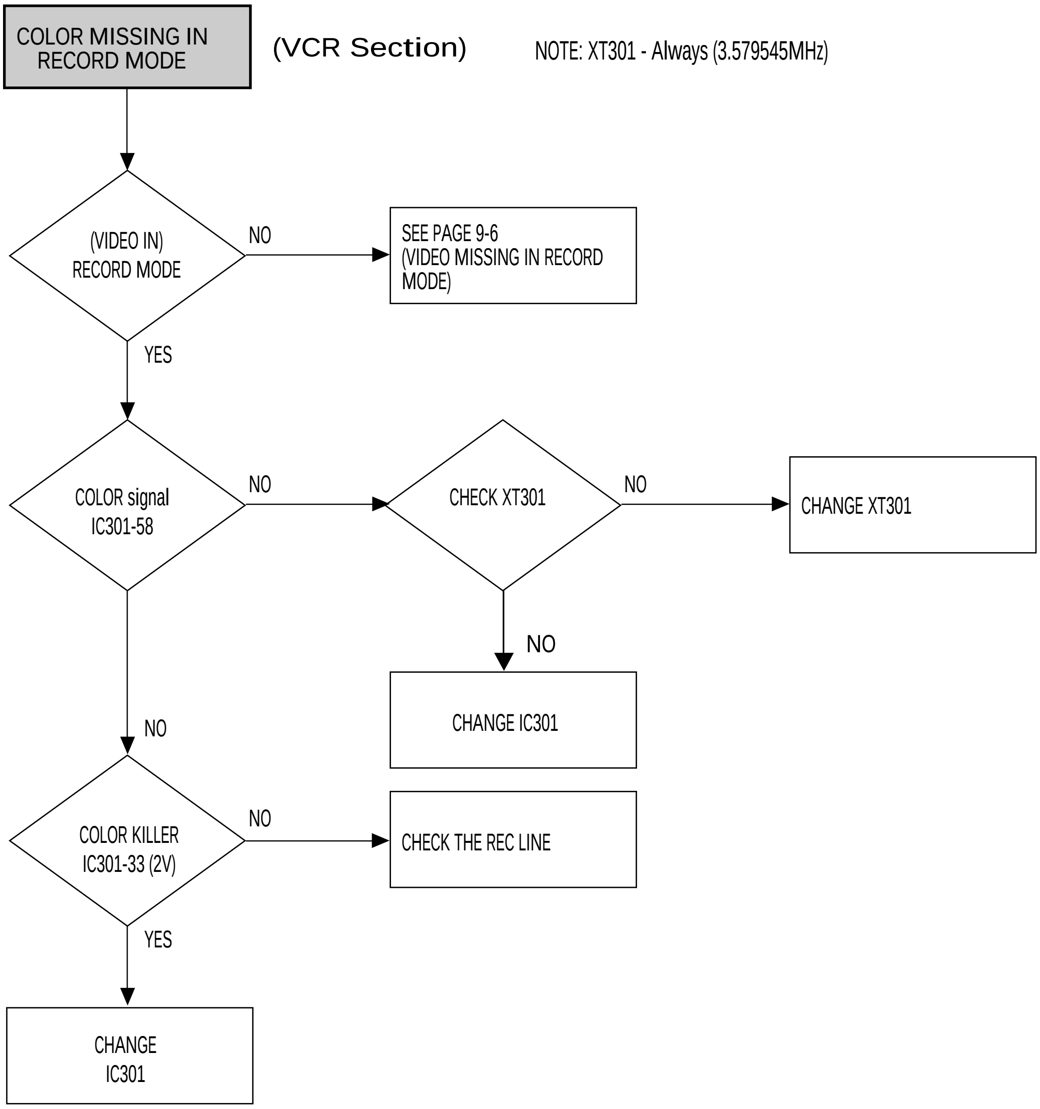

FWD SEARCH DOESN'T OPERATE
(VCR Section)
PLAY OPERATION
NO
SEE (PLAY DOESN'T OPERATE)
YES
PRESS F.FWD FOR FORWARD SEARCH
IS CAPSTAN SPEED CHANGED?
NO
CHANGE DECK
SEARCH OPERATION
NO
CHANGE IC601
YES
END
YES
NOISE BAR LOCKING
NO
(CONTROL PULSE) IC601-89
NO
ADJUST A/CE HEAD
YES
CHECK IC601
YES
CHECK CAPSTAN MOTOR
Control


CASSETTE LOADING MECHANISM DOES NOT OPERATE
(VCR Section)
TURN THE VCR POWER ON AND INSERT A TAPE
TAPE DETECTED
NO
YES
CST IN MODE IC601-75:HIGH(5V)
NO
YES
CHECK START SENSOR (S602) IC601
PRESS EJECT BUTTON
CN604 8pin 12V?
NO
YES
CHECK DM B+ LINE
IC601-38:HIGH(5V) IC601-39:LOW(0V)
YES
NO
CHANGE IC601
IC601-3:LOW(0V) IC601-25:HIGH(5V)
YES
NO
CHECK CASSETT LOADING MECHANISM
CHANGE IC601


VIDEO MISSING IN
EE MODE
(VCR Section)
PLACE VCR IN STOP MODE
TUNER MODE OPERATION
IC801-1
VIDEO IN
NO
IC801-2,3
VIDEO DATA/
CLOCK
NO
CHECK
IC601
YES
YES
CHANGE IC801
IC301-50
VIDEO IN
NO
IC801-4
VIDEO OUT
NO
CHANGE IC801
YES
YES
CHECK IC301
IC301-65
VIDEO OUT
NO
CHECK IC301
YES
CHECK
IC801-22
YES
C808, C902, R301, R806, R900
NO
CHANGE IC801

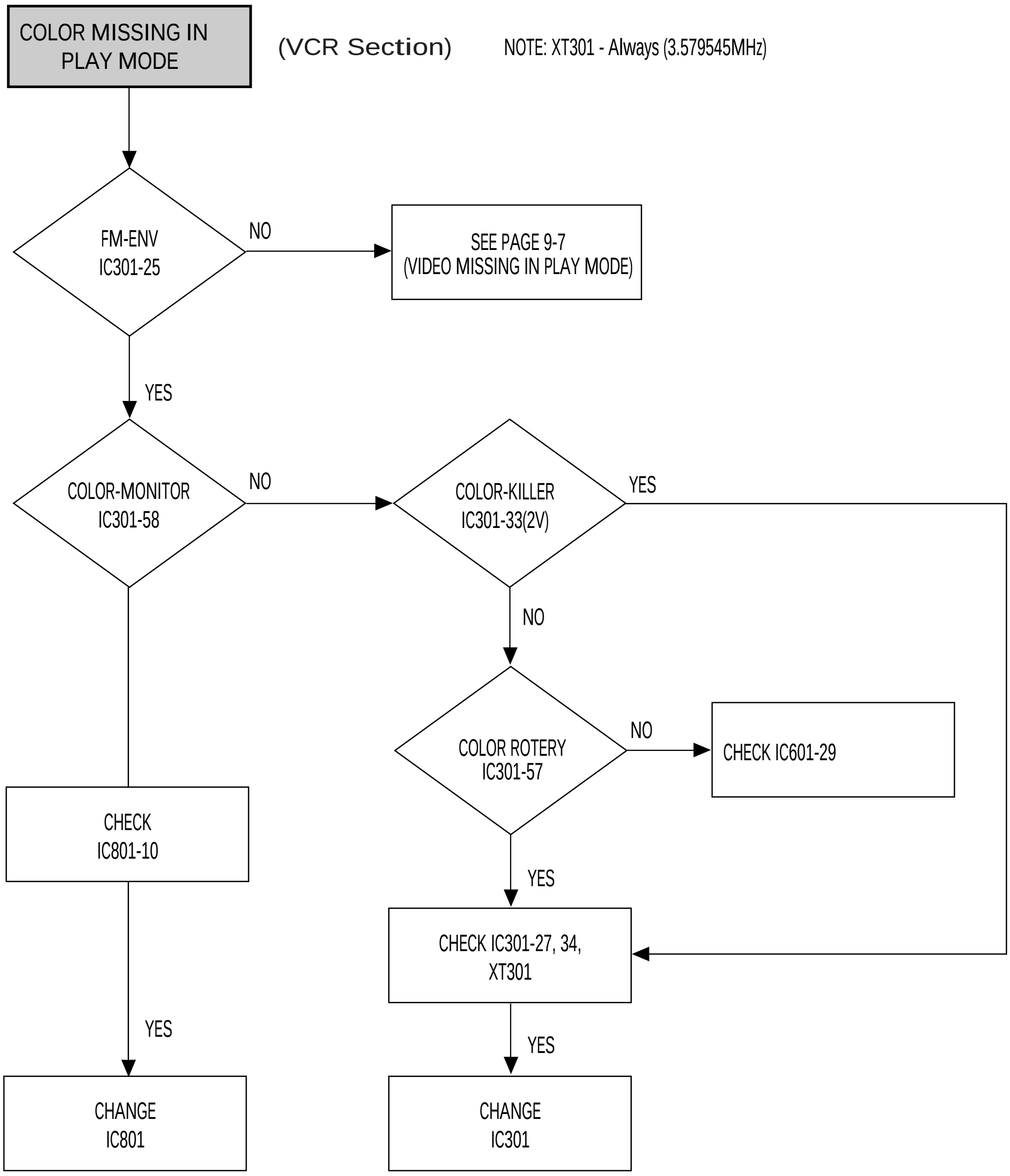

VIDEO MISSING IN RECORD MODE
(VCR Section)
IC301-50
VIDEO signal out?
NO
E-E mode and IC801
CHECK VIDEO signal out
YES
IC301-78
CHECK REC FM signal?
NO
CHECK C392
YES
IC301-94 (SP)
IC301-88 (SLP)
CHECK REC FM signal?
NO
CHECK CN301
YES
NO DEFECT RECORD MODE


VIDEO MISSING IN PLAY MODE
(VCR Section)
VIDEO EE MODE OPERATION
NO
SEE PAGE 9-5 (VIDEO MISSING IN EE MODE)
YES
PLACE THE VCR PLAY MODE
VIDEO FM IC301-21
NO
H'D SW IC301-70
NO
CHECK IC601-24
YES
CHECK VIDEO HEAD
YES
VIDEO IC301-78
NO
CHECK C392
YES
VIDEO IC301-65
YES
VIDEO IN IC801-10
YES
VIDEO OUT IC801-18
NO
CHANGE IC301
NO
CHECK IC801
NO
CHECK Q810, R900, L901


COLOR MISSING IN RECORD MODE
(VIDEO IN) RECORD MODE
NO
SEE PAGE 9-6 (VIDEO MISSING IN RECORD MODE)
YES
COLOR signal IC301-58
NO
CHECK XT301
NO
CHANGE XT301
NO
CHANGE IC301
NO
COLOR KILLER IC301-33 (2V)
NO
CHECK THE REC LINE
YES
CHANGE IC301

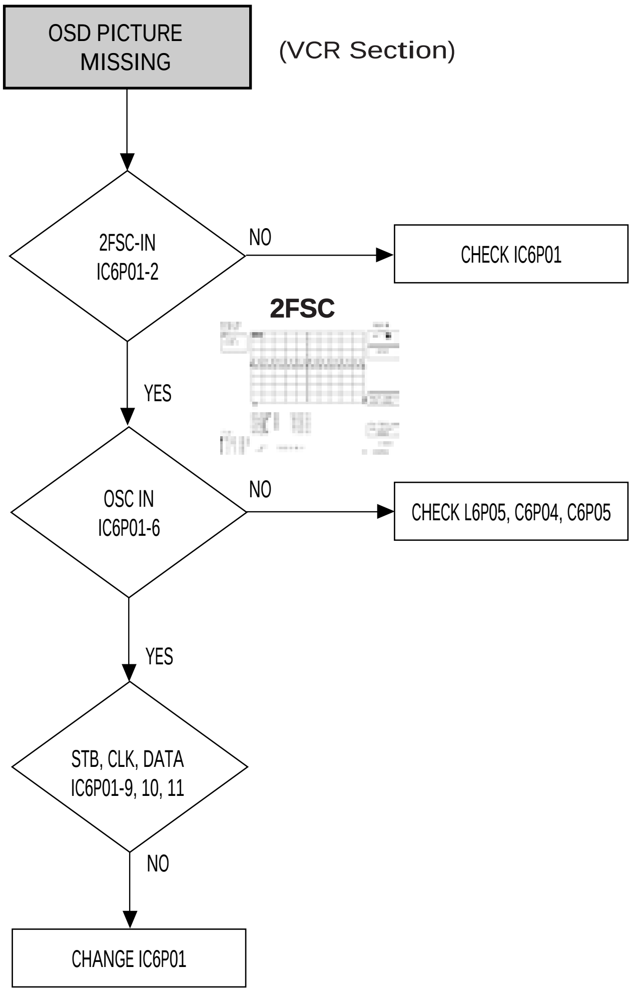
(VCR Section)

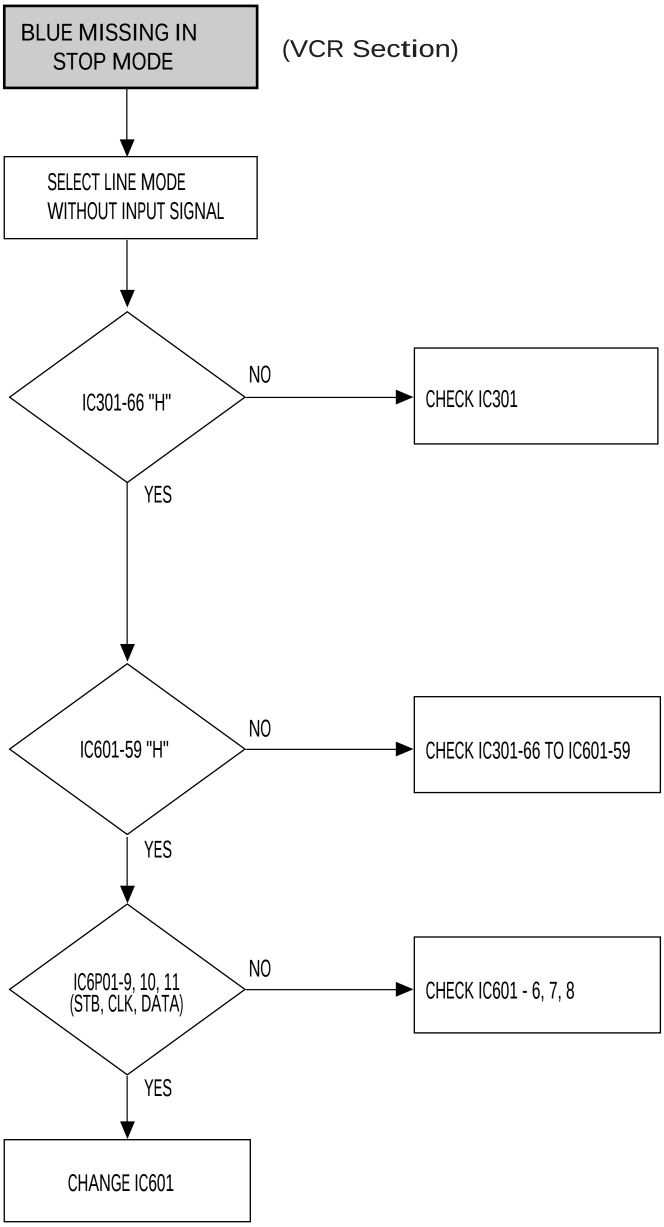
NOTE: XT301 - Always (3.579545MHz)

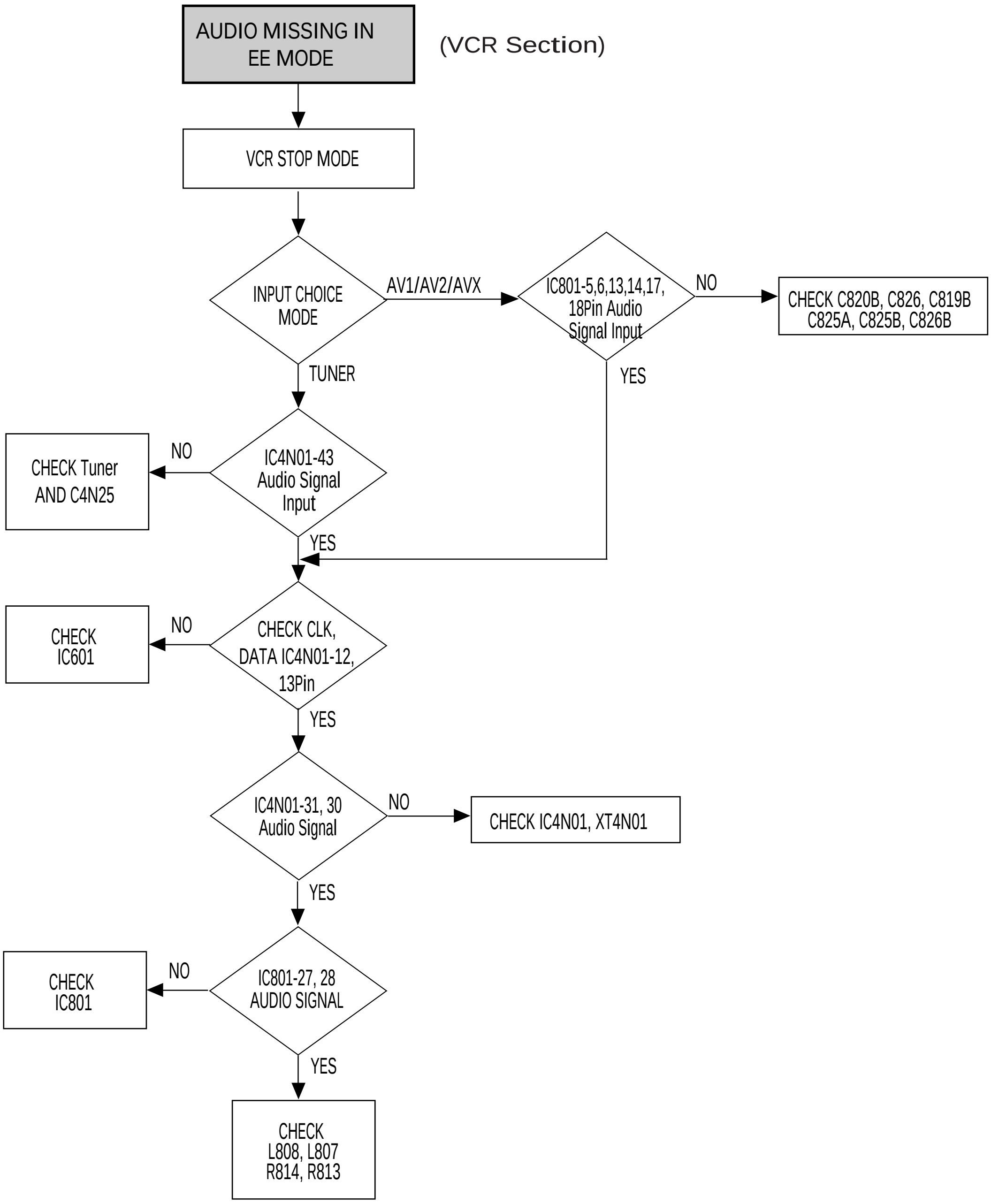

COLOR MISSING IN PLAY MODE
FM-ENV IC301-25
NO
SEE PAGE 9-7 (VIDEO MISSING IN PLAY MODE)
YES
COLOR-MONITOR IC301-58
NO
COLOR-KILLER IC301-33(2V)
YES
NO
COLOR ROTERY IC301-57
NO
CHECK IC601-29
CHECK IC801-10
YES
CHECK IC301-27, 34, XT301
YES
YES
CHANGE IC801
CHANGE IC301

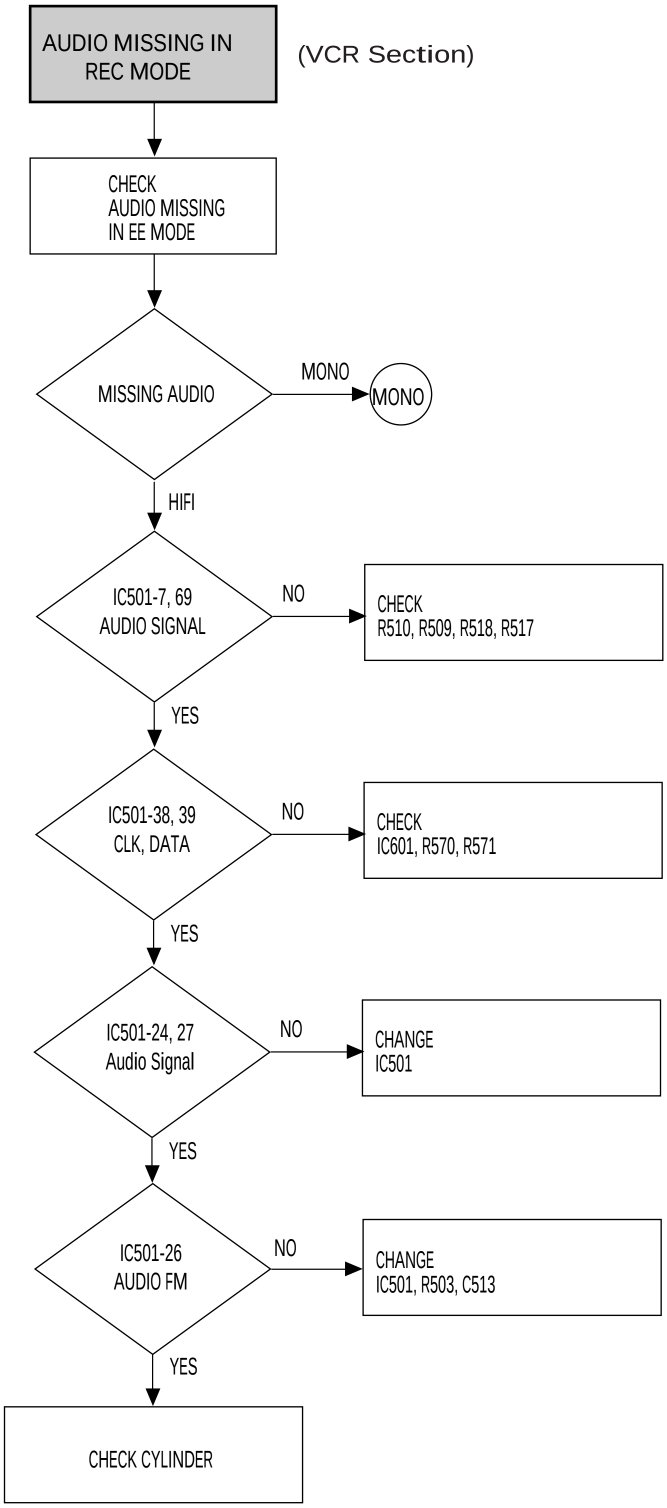
(VCR Section)

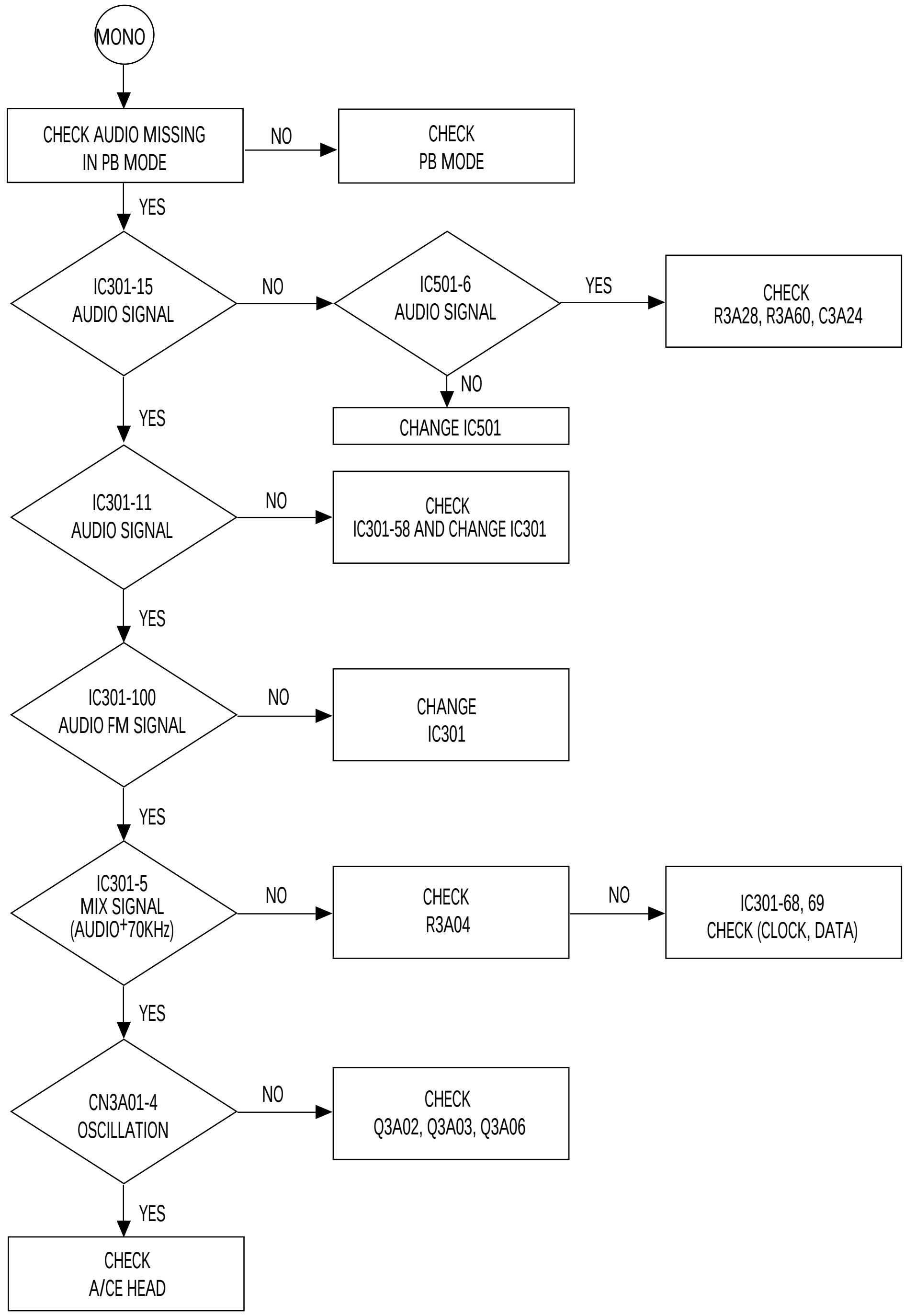
NOTE: XT301 - Always (3.579545MHz)

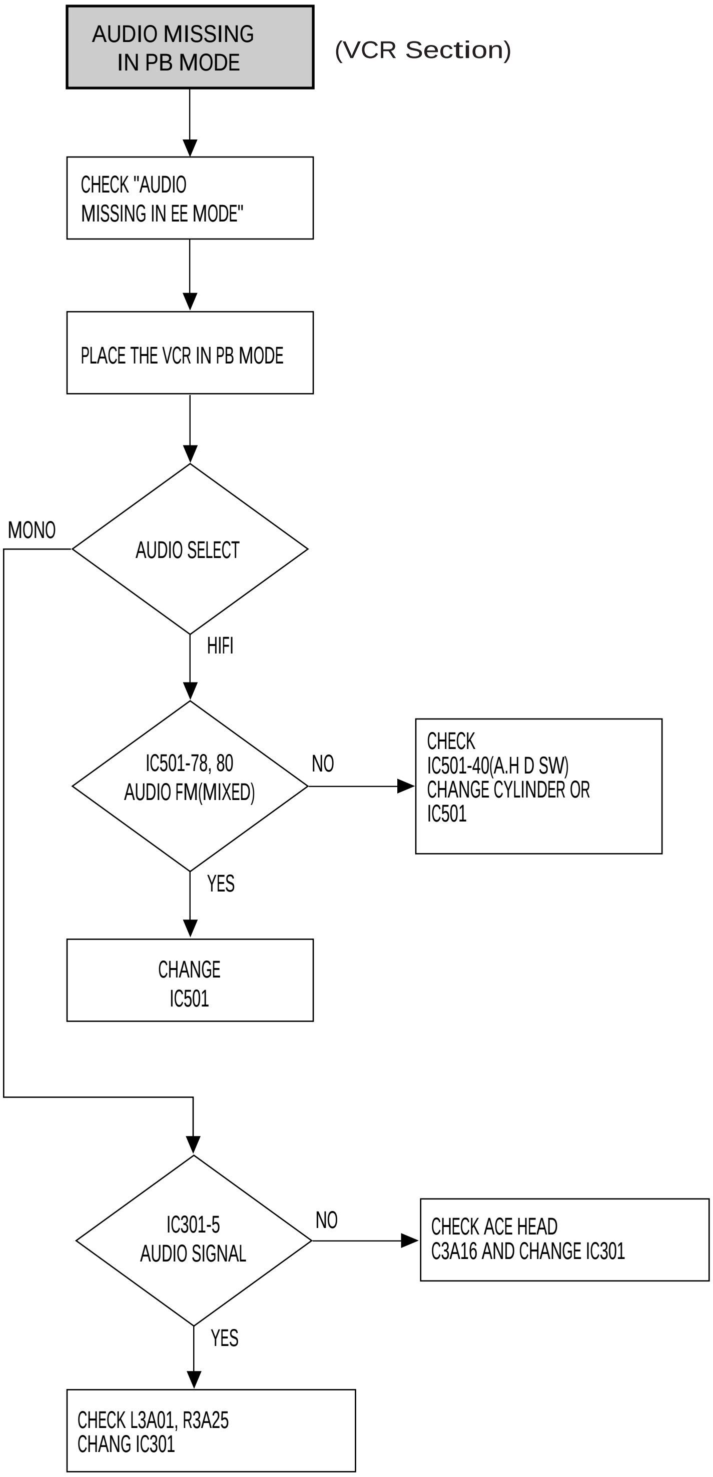

OSD PICTURE MISSING
(VCR Section)
2FSC-IN IC6P01-2
NO
CHECK IC6P01
2FSC
YES
OSC IN IC6P01-6
NO
CHECK L6P05, C6P04, C6P05
YES
STB, CLK, DATA IC6P01-9, 10, 11
NO
CHANGE IC6P01

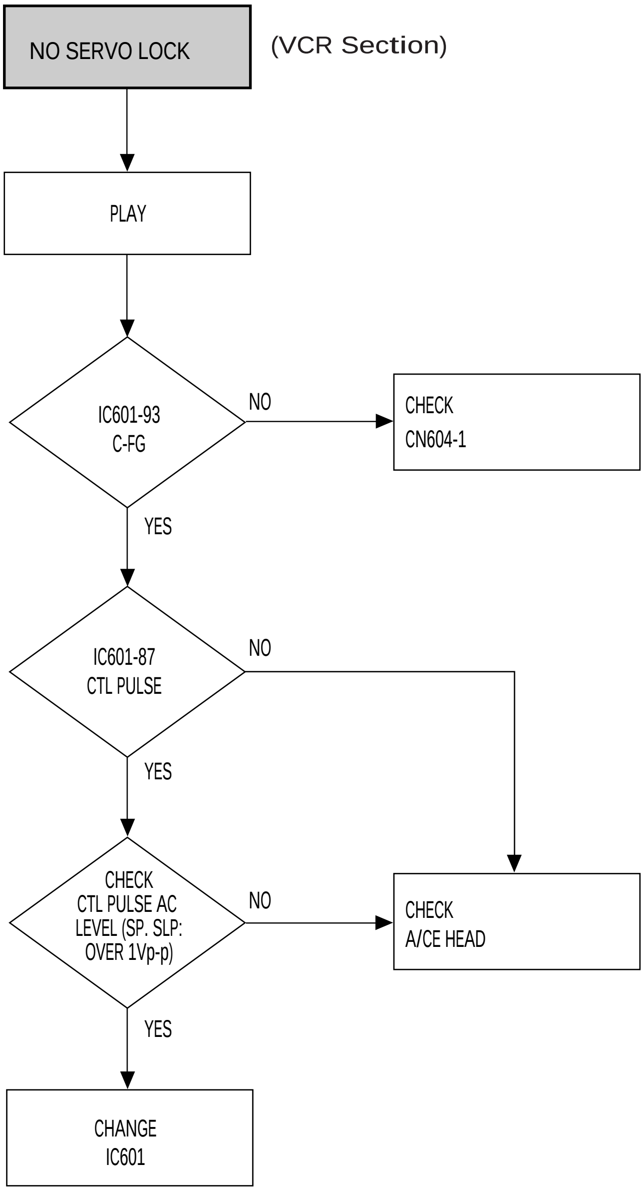

BLUE MISSING IN STOP MODE
(VCR Section)
SELECT LINE MODE WITHOUT INPUT SIGNAL
IC301-66 "H"
NO
CHECK IC301
YES
IC601-59 "H"
NO
CHECK IC301-66 TO IC601-59
YES
IC6P01-9, 10, 11 (STB, CLK, DATA)
NO
CHECK IC601 - 6, 7, 8
YES
CHANGE IC601

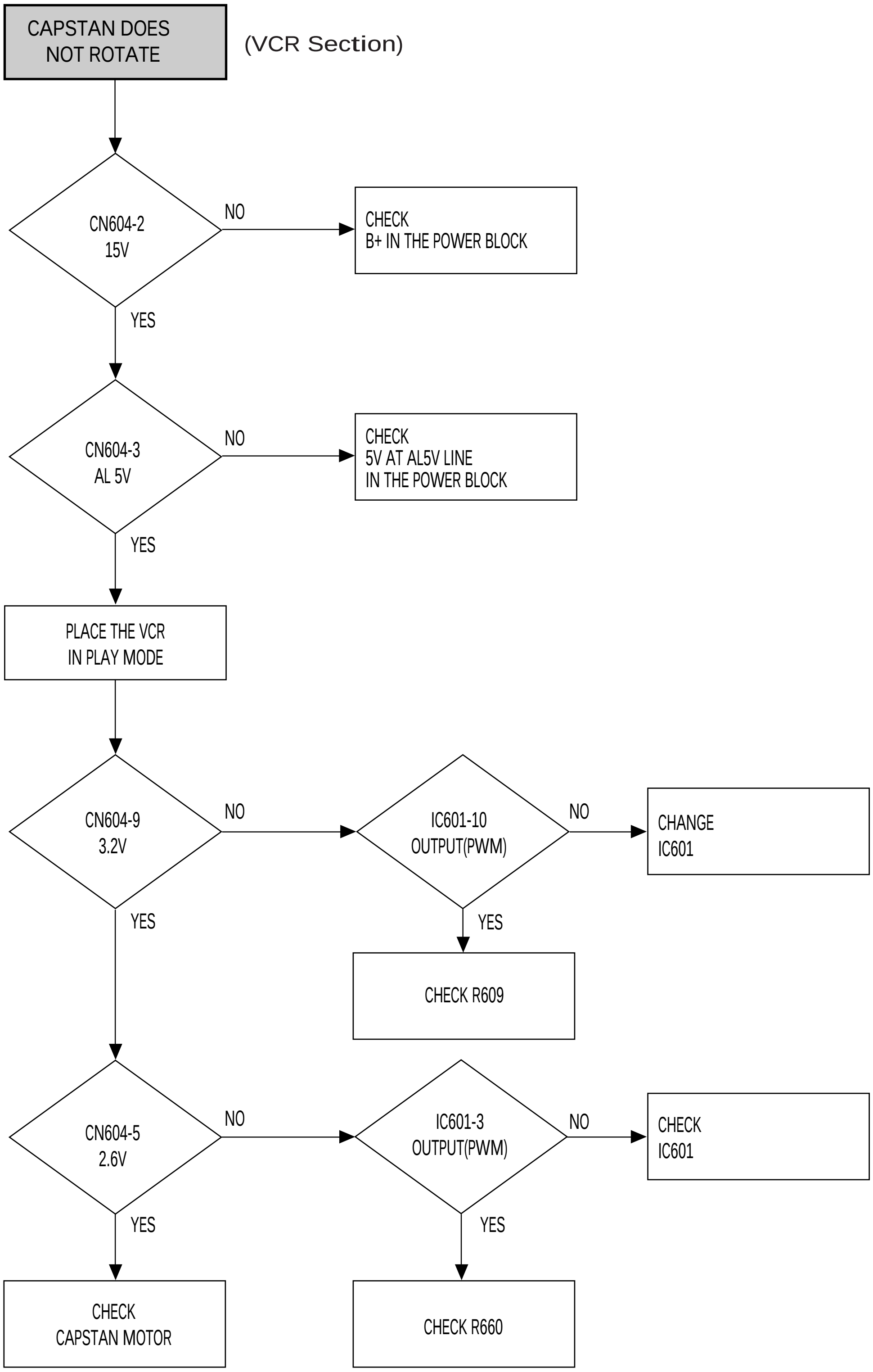

AUDIO MISSING IN EE MODE
(VCR Section)
VCR STOP MODE
INPUT CHOICE MODE
AV1/AV2/AVX
IC801-5,6,13,14,17, 18Pin Audio Signal Input
NO
CHECK C820B, C826, C819B C825A, C825B, C826B
YES
TUNER
IC4N01-43 Audio Signal Input
NO
CHECK Tuner AND C4N25
YES
CHECK CLK, DATA IC4N01-12, 13Pin
NO
CHECK IC601
YES
IC4N01-31, 30 Audio Signal
NO
CHECK IC4N01, XT4N01
YES
IC801-27, 28 AUDIO SIGNAL
NO
CHECK IC801
YES
CHECK L808, L807 R814, R813

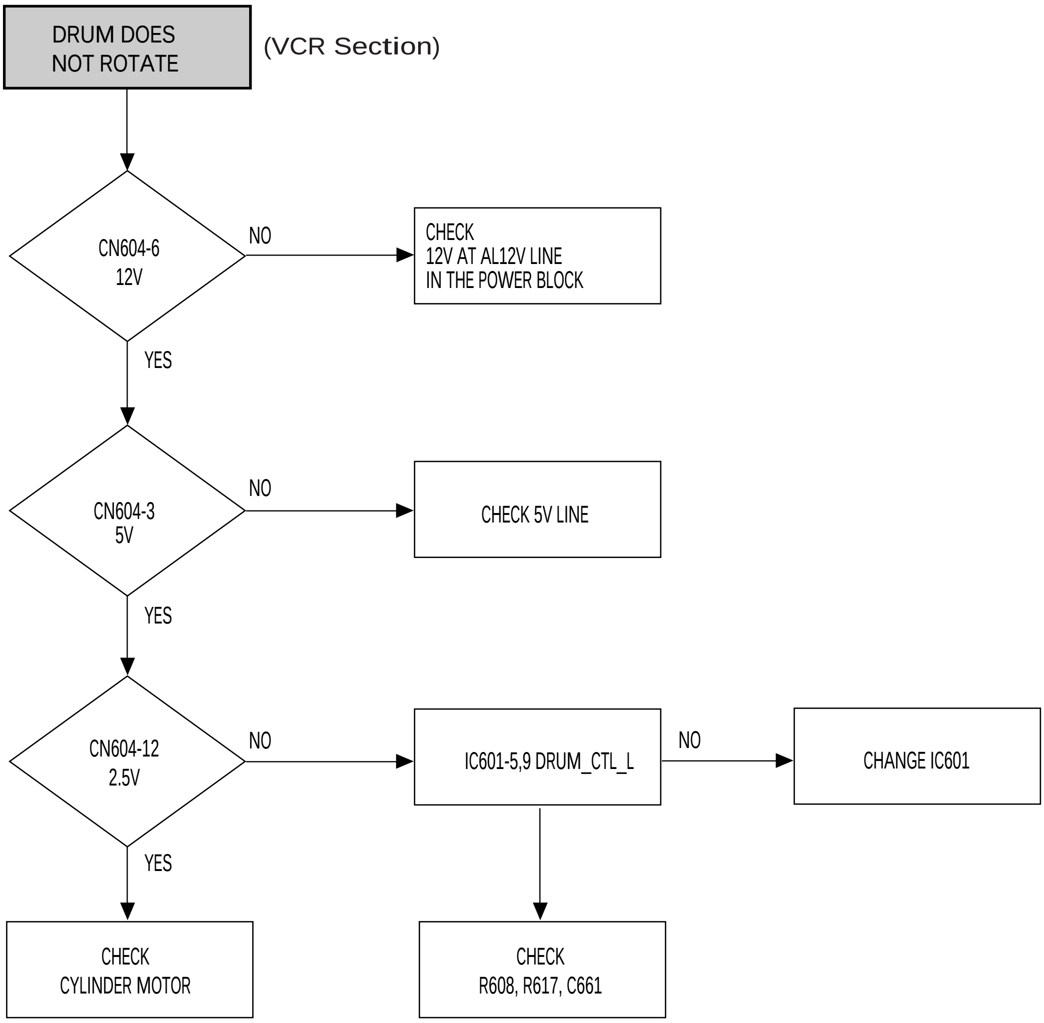

AUDIO MISSING IN REC MODE
(VCR Section)
CHECK AUDIO MISSING IN EE MODE
MISSING AUDIO
MONO
MONO
HIFI
IC501-7, 69 AUDIO SIGNAL
NO
CHECK R510, R509, R518, R517
YES
IC501-38, 39 CLK, DATA
NO
CHECK IC601, R570, R571
YES
IC501-24, 27 Audio Signal
NO
CHANGE IC501
YES
IC501-26 AUDIO FM
NO
CHANGE IC501, R503, C513
YES
CHECK CYLINDER


MONO
CHECK AUDIO MISSING IN PB MODE
NO
CHECK PB MODE
YES
IC301-15 AUDIO SIGNAL
NO
IC501-6 AUDIO SIGNAL
YES
CHECK R3A28, R3A60, C3A24
NO
CHANGE IC501
YES
IC301-11 AUDIO SIGNAL
NO
CHECK IC301-58 AND CHANGE IC301
YES
IC301-100 AUDIO FM SIGNAL
NO
CHANGE IC301
YES
IC301-5 MIX SIGNAL (AUDIO+70KHz)
NO
CHECK R3A04
NO
IC301-68, 69 CHECK (CLOCK, DATA)
YES
CN3A01-4 OSCILLATION
NO
CHECK Q3A02, Q3A03, Q3A06
YES
CHECK A/CE HEAD

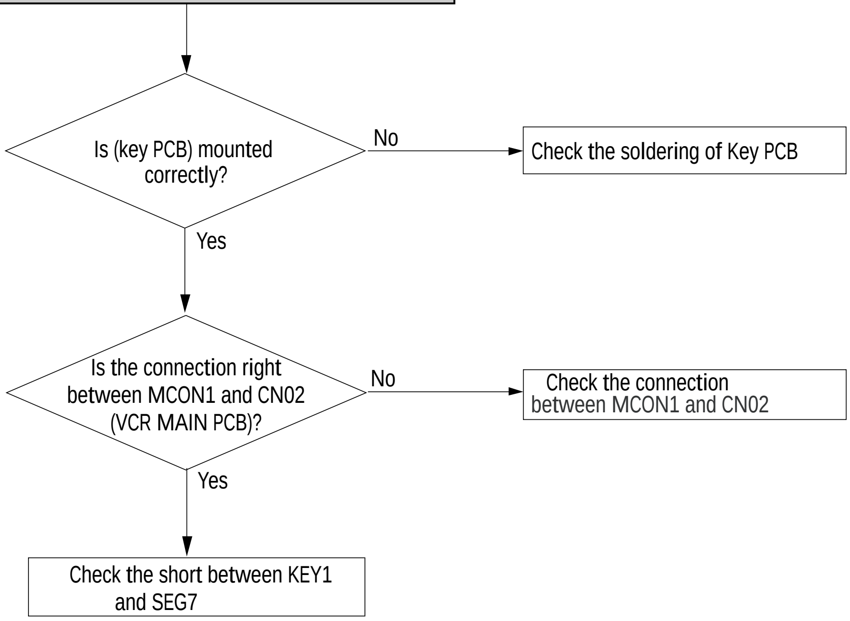

AUDIO MISSING
IN PB MODE
(VCR Section)
CHECK "AUDIO
MISSING IN EE MODE"
PLACE THE VCR IN PB MODE
AUDIO SELECT
MONO
HIFI
IC501-78, 80
AUDIO FM(MIXED)
NO
CHECK
IC501-40(A.H D SW)
CHANGE CYLINDER OR
IC501
YES
CHANGE
IC501
IC301-5
AUDIO SIGNAL
NO
CHECK ACE HEAD
C3A16 AND CHANGE IC301
YES
CHECK L3A01, R3A25
CHANG IC301

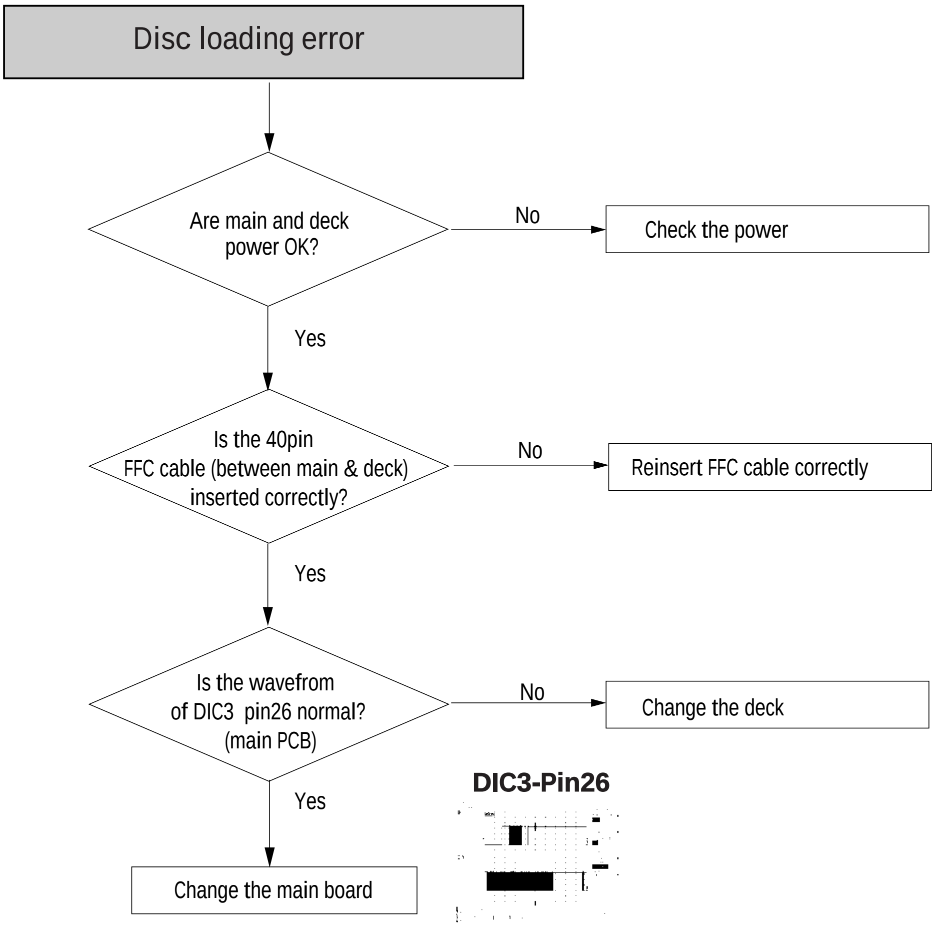

NO SERVO LOCK
(VCR Section)
PLAY
IC601-93
C-FG
NO
CHECK
CN604-1
YES
IC601-87
CTL PULSE
NO
YES
CHECK
CTL PULSE AC
LEVEL (SP. SLP:
OVER 1Vp-p)
NO
CHECK
A/CE HEAD
YES
CHANGE
IC601

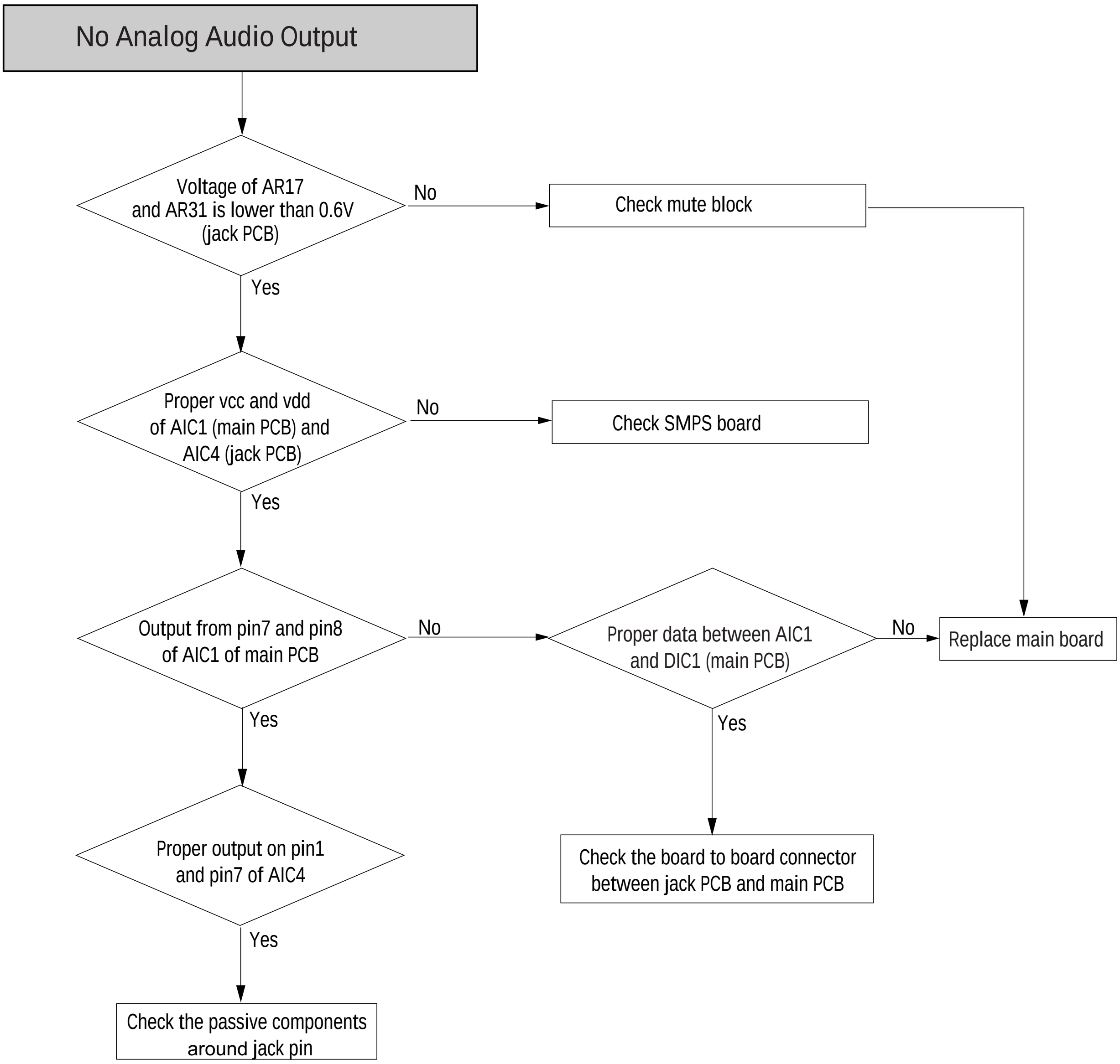

CAPSTAN DOES NOT ROTATE
(VCR Section)
CN604-2
15V
NO
CHECK
B+ IN THE POWER BLOCK
YES
CN604-3
AL 5V
NO
CHECK
5V AT AL5V LINE
IN THE POWER BLOCK
YES
PLACE THE VCR
IN PLAY MODE
CN604-9
3.2V
NO
IC601-10
OUTPUT(PWM)
NO
CHANGE
IC601
YES
YES
CHECK R609
CN604-5
2.6V
NO
IC601-3
OUTPUT(PWM)
NO
CHECK
IC601
YES
YES
CHECK
CAPSTAN MOTOR
CHECK R660

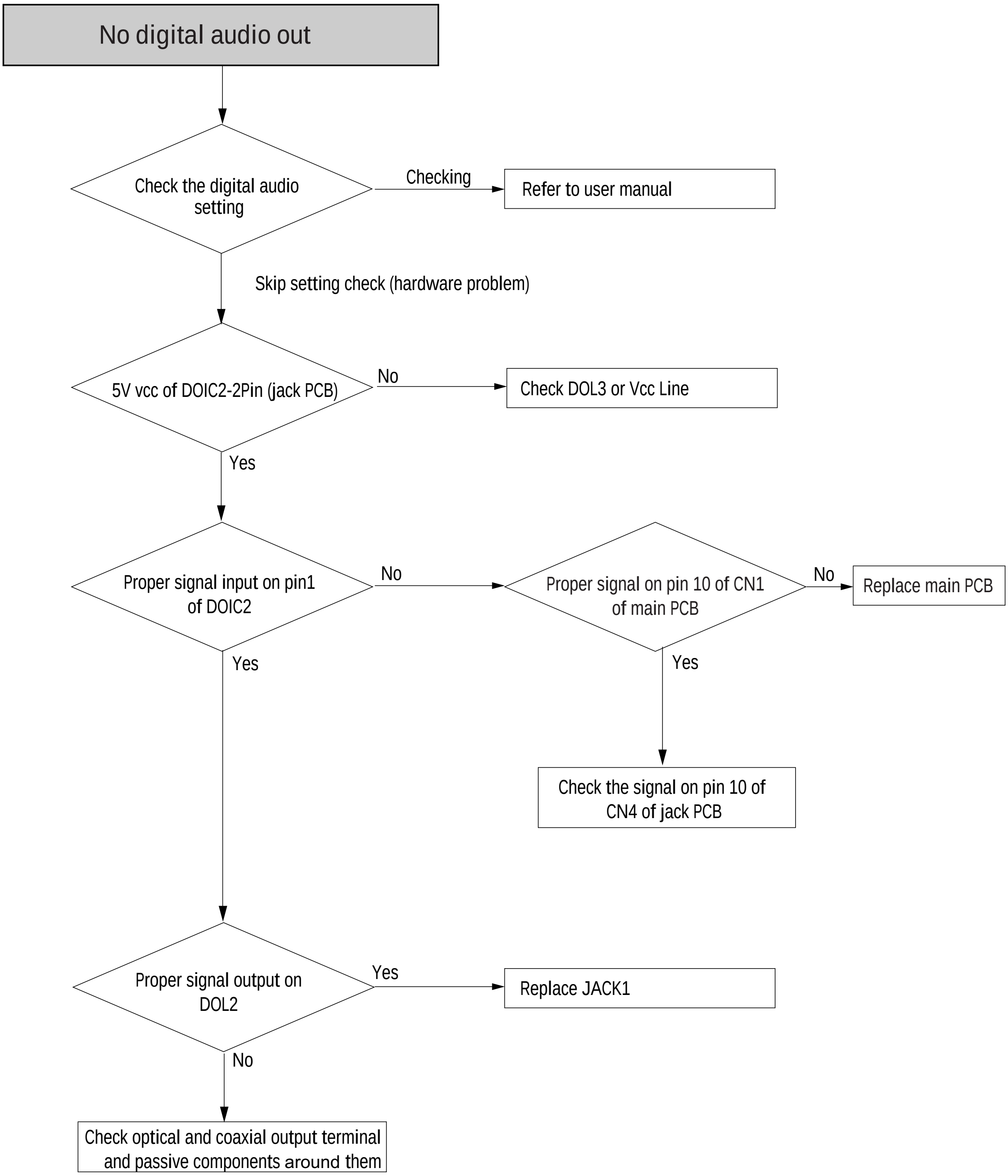

DRUM DOES NOT ROTATE
(VCR Section)
CN604-6 12V
NO
CHECK 12V AT AL12V LINE IN THE POWER BLOCK
YES
CN604-3 5V
NO
CHECK 5V LINE
YES
CN604-12 2.5V
NO
IC601-5,9 DRUM_CTL_L
NO
CHANGE IC601
YES
CHECK CYLINDER MOTOR
CHECK R608, R617, C661

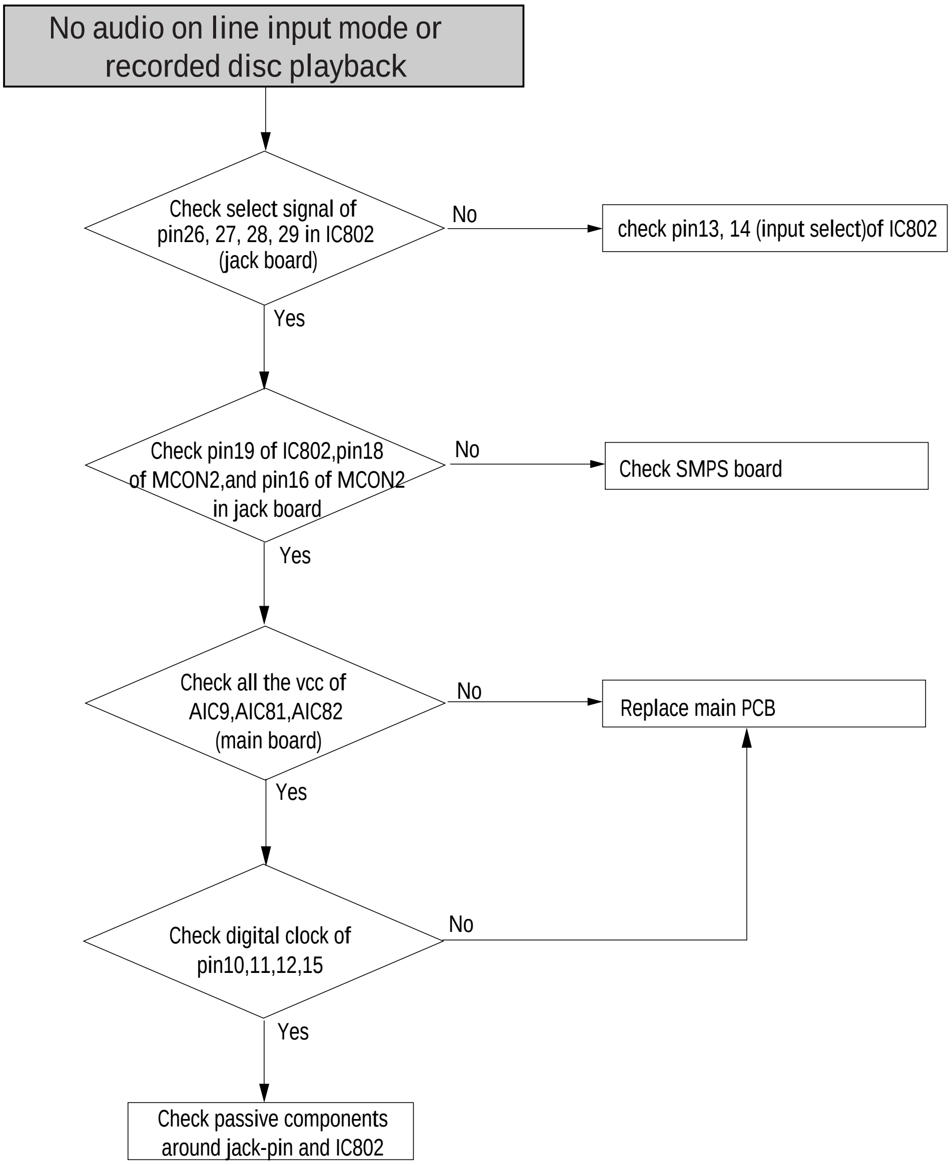
Tray repeating open/close operation

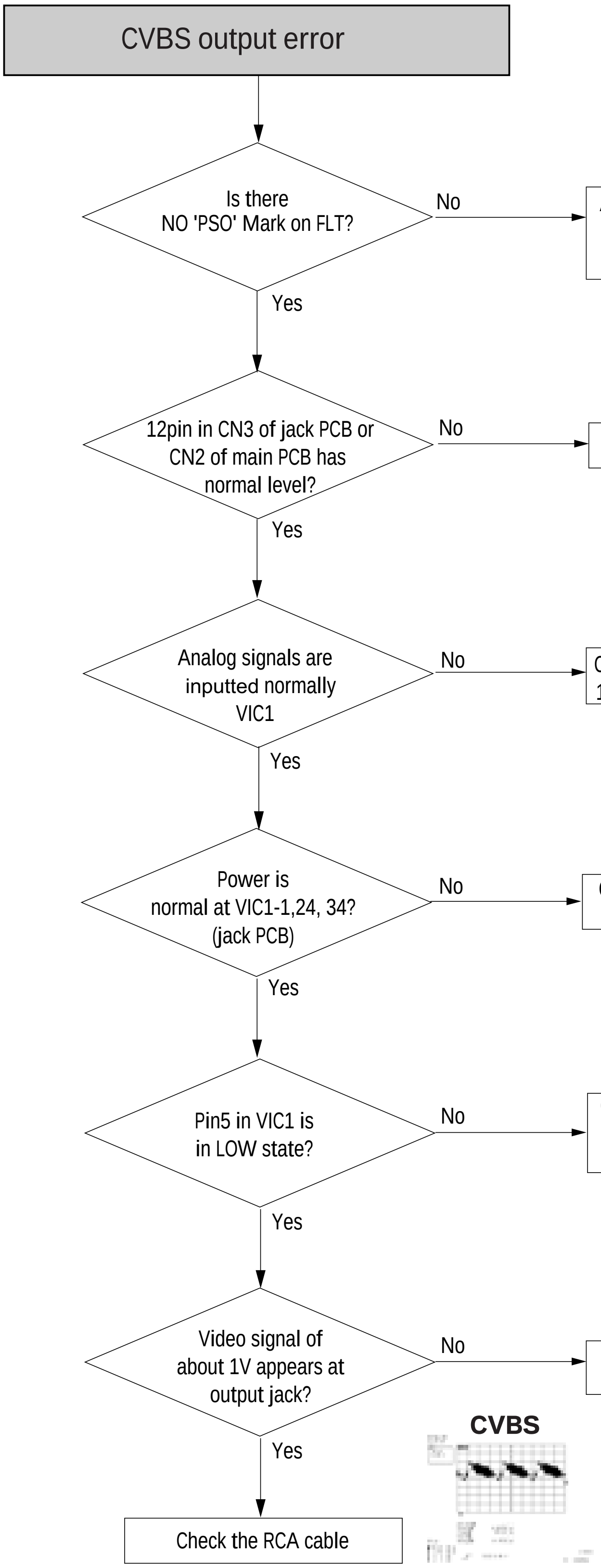

Is (key PCB) mounted correctly?
No
Check the soldering of Key PCB
Yes
Is the connection right between MCON1 and CN02 (VCR MAIN PCB)?
No
Check the connection between MCON1 and CN02
Yes
Check the short between KEY1 and SEG7

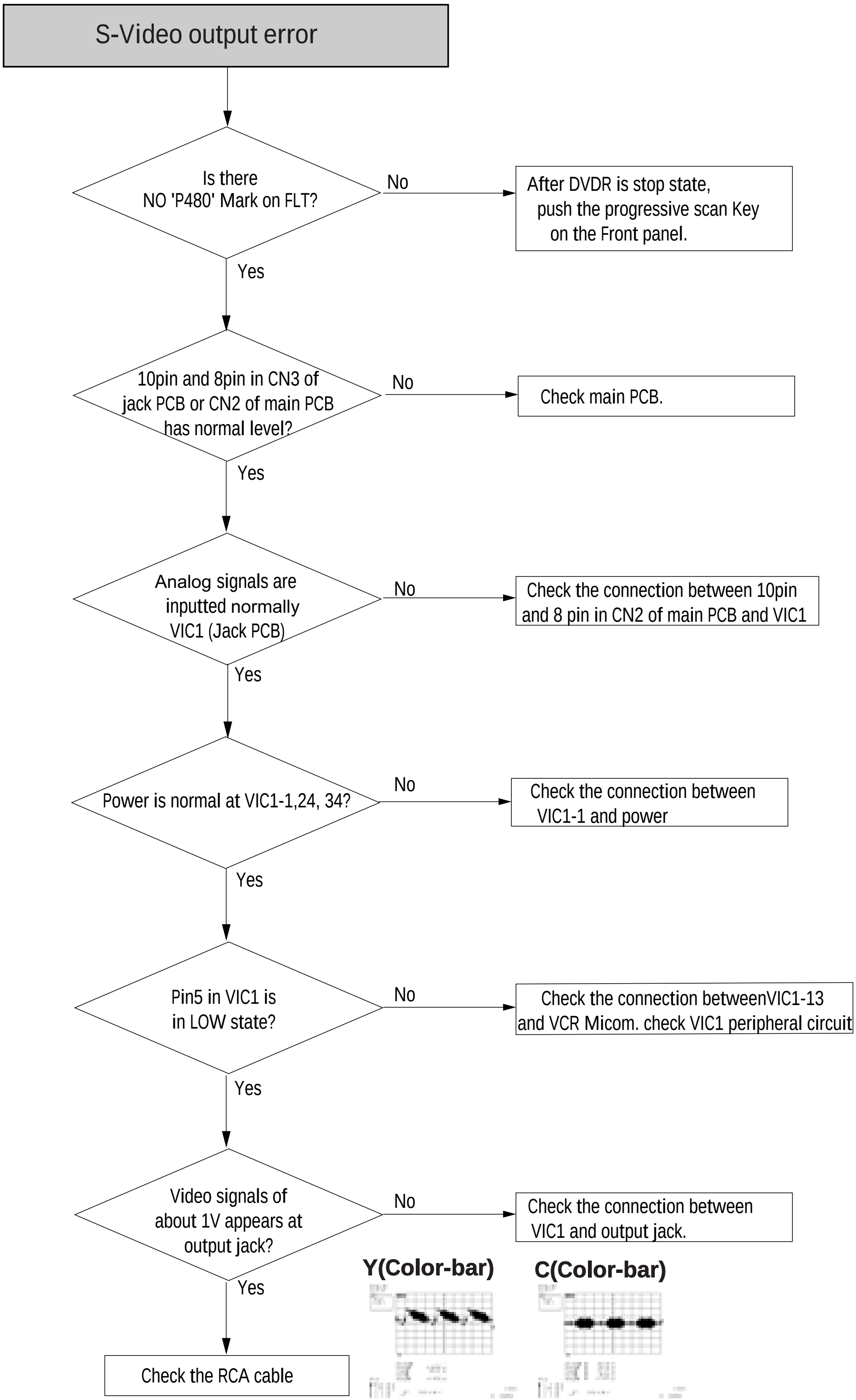

Disc loading error
Are main and deck power OK?
No
Check the power
Yes
Is the 40pin FFC cable (between main & deck) inserted correctly?
No
Reinsert FFC cable correctly
Yes
Is the wavefrom of DIC3 pin26 normal? (main PCB)
No
Change the deck
Yes
Change the main board
DIC3-Pin26

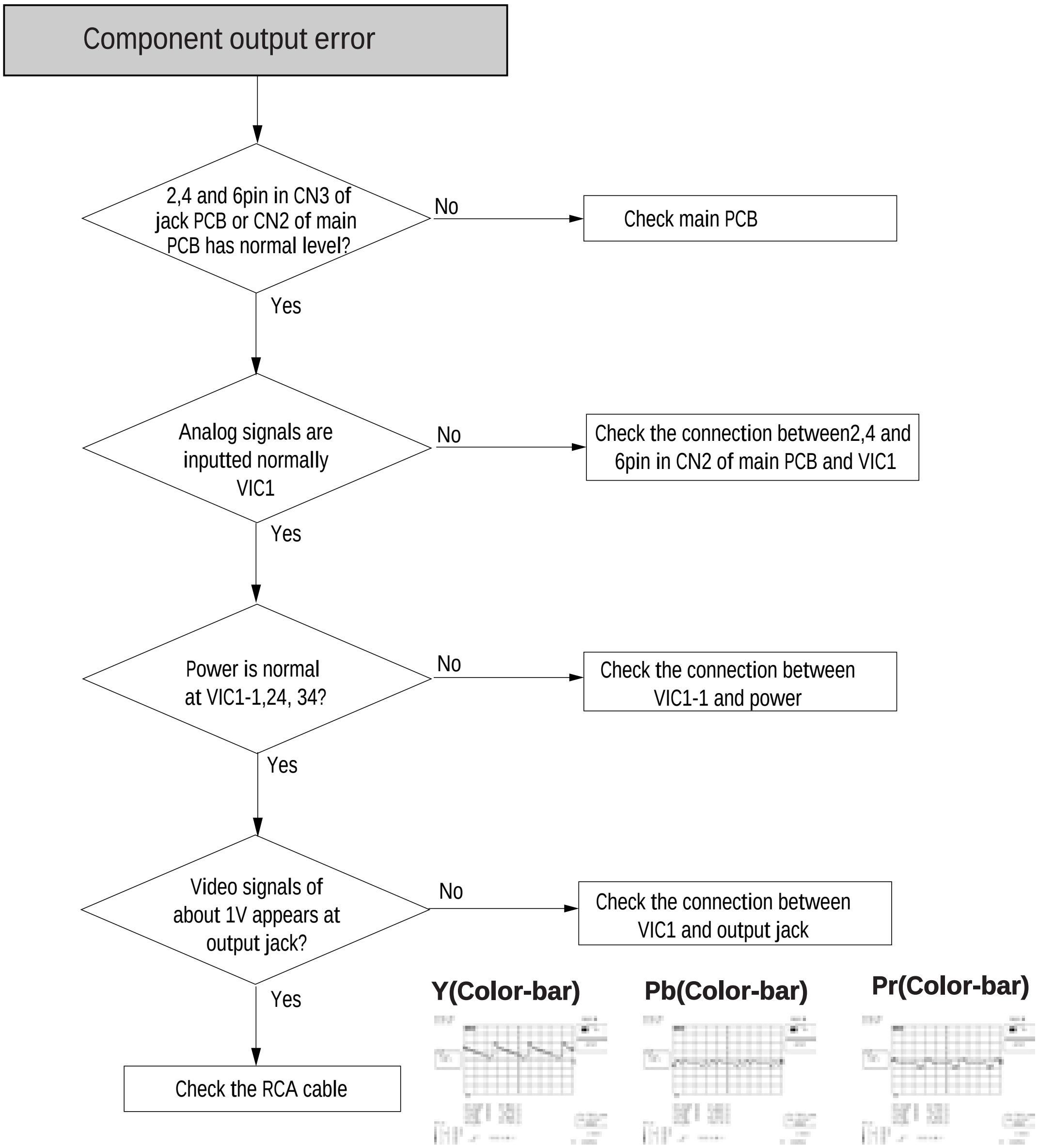

No Analog Audio Output
Voltage of AR17 and AR31 is lower than 0.6V (jack PCB)
No
Check mute block
Yes
Proper vcc and vdd of AIC1 (main PCB) and AIC4 (jack PCB)
No
Check SMPS board
Yes
Output from pin7 and pin8 of AIC1 of main PCB
No
Proper data between AIC1 and DIC1 (main PCB)
No
Replace main board
Yes
Check the board to board connector between jack PCB and main PCB
Yes
Proper output on pin1 and pin7 of AIC4
Yes
Check the passive components around jack pin

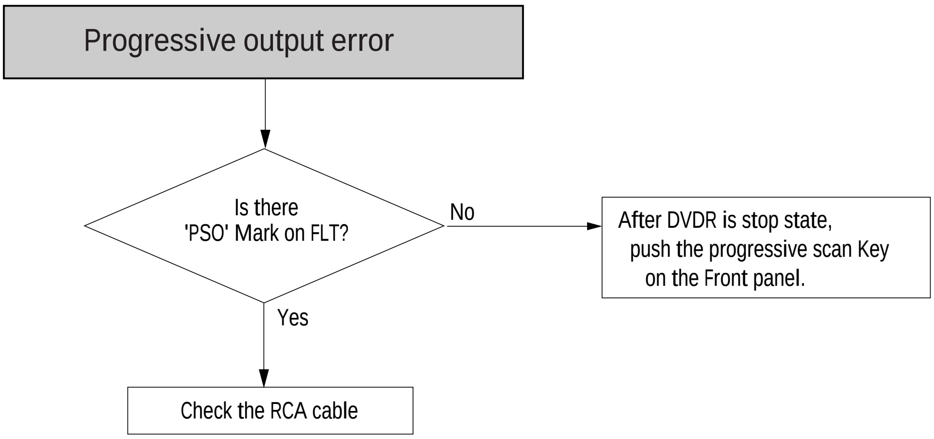

No digital audio out
Check the digital audio setting
Checking
Refer to user manual
Skip setting check (hardware problem)
5V vcc of DOIC2-2Pin (jack PCB)
No
Check DOL3 or Vcc Line
Yes
Proper signal input on pin1 of DOIC2
No
Proper signal on pin 10 of CN1 of main PCB
No
Replace main PCB
Yes
Check the signal on pin 10 of CN4 of jack PCB
Yes
Proper signal output on DOL2
Yes
Replace JACK1
No
Check optical and coaxial output terminal and passive components around them

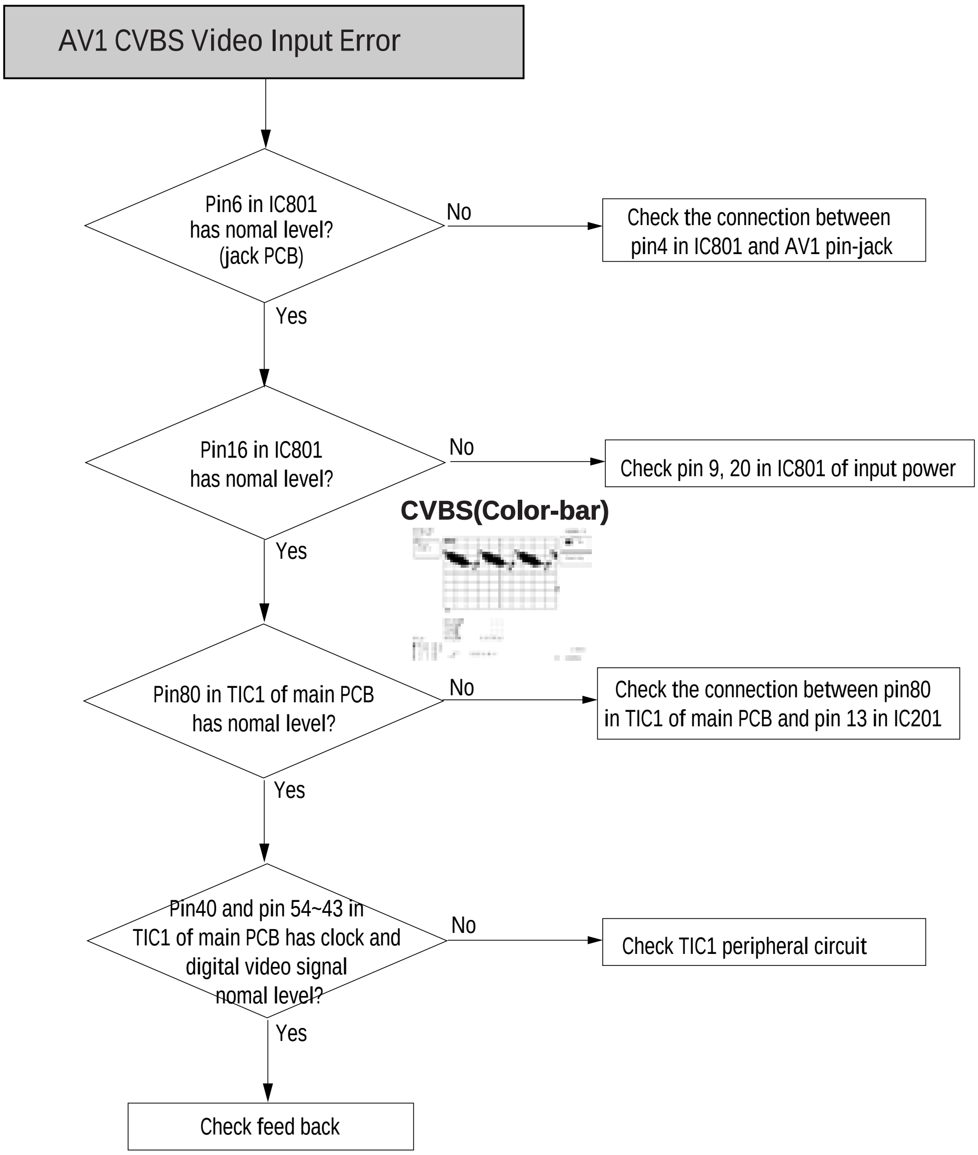

No audio on line input mode or recorded disc playback
Check select signal of pin26, 27, 28, 29 in IC802 (jack board)
No
check pin13, 14 (input select)of IC802
Yes
Check pin19 of IC802,pin18 of MCON2,and pin16 of MCON2 in jack board
No
Check SMPS board
Yes
Check all the vcc of AIC9,AIC81,AIC82 (main board)
No
Replace main PCB
Yes
Check digital clock of pin10,11,12,15
No
Yes
Check passive components around jack-pin and IC802

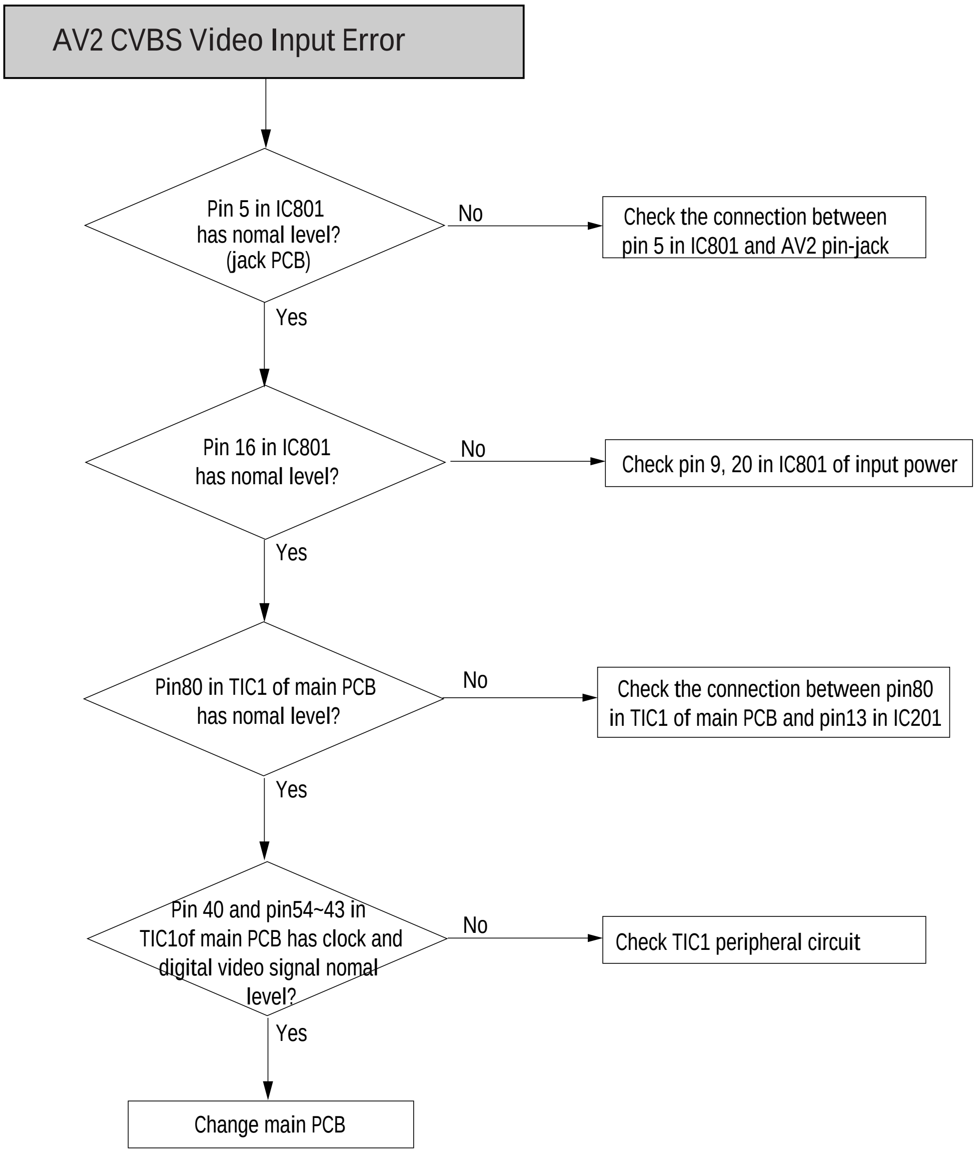

CVBS output error
Is there NO 'PSO' Mark on FLT?
No
After DVDR is stop state, push the progressive scan Key on the Front panel.
Yes
12pin in CN3 of jack PCB or CN2 of main PCB has normal level?
No
Check main PCB
Yes
Analog signals are inputted normally VIC1
No
Check the connection between 12pin in CN2 OF main PCB and VIC1
Yes
Power is normal at VIC1-1,24, 34? (jack PCB)
No
Check the connection between VIC1-1 and power
Yes
Pin5 in VIC1 is in LOW state?
No
Check the connection between VIC1-13 and VCR Micom. check VIC1 peripheral circuit
Yes
Video signal of about 1V appears at output jack?
No
Check the connection between VIC1 and output jack
Yes
Check the RCA cable
CVBS

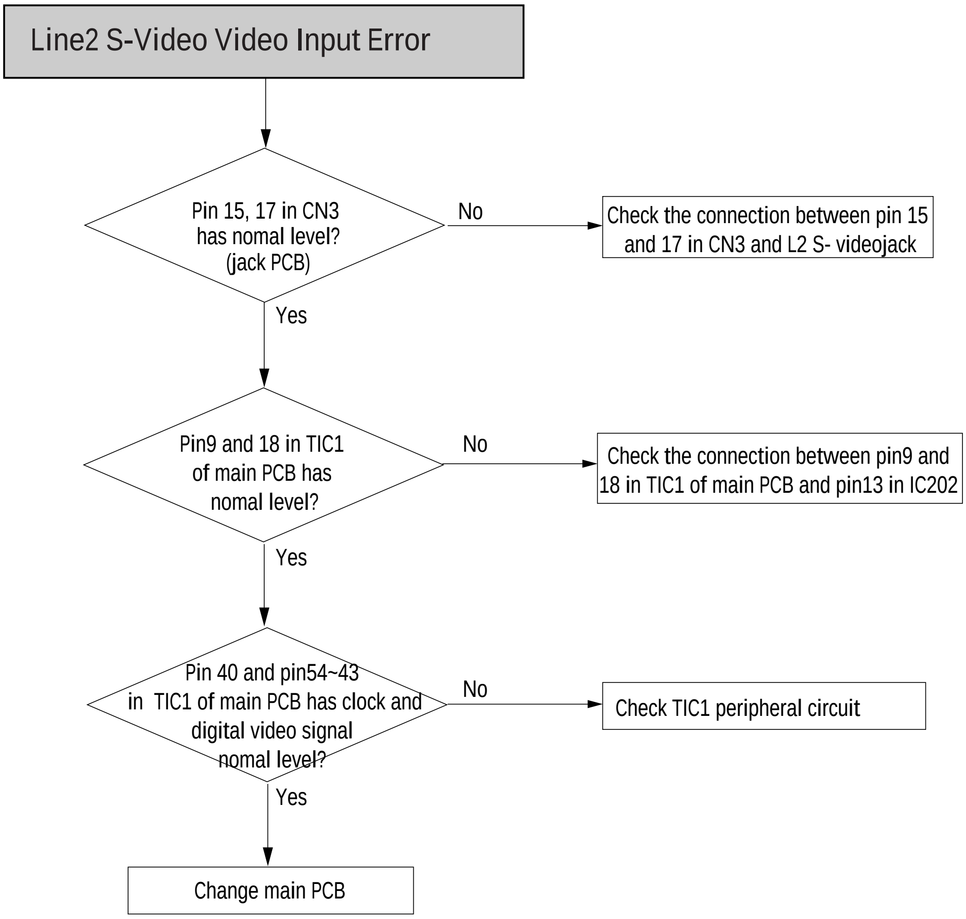

S-Video output error
Is there NO 'P480' Mark on FLT?
No
After DVDR is stop state, push the progressive scan Key on the Front panel.
Yes
10pin and 8pin in CN3 of jack PCB or CN2 of main PCB has normal level?
No
Check main PCB.
Yes
Analog signals are inputted normally VIC1 (Jack PCB)
No
Check the connection between 10pin and 8 pin in CN2 of main PCB and VIC1
Yes
Power is normal at VIC1-1,24, 34?
No
Check the connection between VIC1-1 and power
Yes
Pin5 in VIC1 is in LOW state?
No
Check the connection betweenVIC1-13 and VCR Micom. check VIC1 peripheral circuit
Yes
Video signals of about 1V appears at output jack?
No
Check the connection between VIC1 and output jack.
Yes
Check the RCA cable
Y(Color-bar)
C(Color-bar)


Component output error
2,4 and 6pin in CN3 of jack PCB or CN2 of main PCB has normal level?
No
Check main PCB
Yes
Analog signals are inputted normally VIC1
No
Check the connection between2,4 and 6pin in CN2 of main PCB and VIC1
Yes
Power is normal at VIC1-1,24, 34?
No
Check the connection between VIC1-1 and power
Yes
Video signals of about 1V appears at output jack?
No
Check the connection between VIC1 and output jack
Yes
Check the RCA cable
Y(Color-bar)
Pb(Color-bar)
Pr(Color-bar)


Progressive output error
Is there
'PSO' Mark on FLT?
No
After DVDR is stop state,
push the progressive scan Key
on the Front panel.
Yes
Check the RCA cable


AV1 CVBS Video Input Error
Pin6 in IC801
has nomal level?
(jack PCB)
No
Check the connection between
pin4 in IC801 and AV1 pin-jack
Yes
Pin16 in IC801
has nomal level?
No
Check pin 9, 20 in IC801 of input power
CVBS(Color-bar)
Yes
Pin80 in TIC1 of main PCB
has nomal level?
No
Check the connection between pin80
in TIC1 of main PCB and pin 13 in IC201
Yes
Pin40 and pin 54~43 in
TIC1 of main PCB has clock and
digital video signal
nomal level?
No
Check TIC1 peripheral circuit
Yes
Check feed back


AV2 CVBS Video Input Error
Pin 5 in IC801 has nomal level? (jack PCB)
No
Check the connection between pin 5 in IC801 and AV2 pin-jack
Yes
Pin 16 in IC801 has nomal level?
No
Check pin 9, 20 in IC801 of input power
Yes
Pin80 in TIC1 of main PCB has nomal level?
No
Check the connection between pin80 in TIC1 of main PCB and pin13 in IC201
Yes
Pin 40 and pin54~43 in TIC1of main PCB has clock and digital video signal nomal level?
No
Check TIC1 peripheral circuit
Yes
Change main PCB


Line2 S-Video Video Input Error
Pin 15, 17 in CN3 has nomal level? (jack PCB)
No
Check the connection between pin 15 and 17 in CN3 and L2 S- videojack
Yes
Pin9 and 18 in TIC1 of main PCB has nomal level?
No
Check the connection between pin9 and 18 in TIC1 of main PCB and pin13 in IC202
Yes
Pin 40 and pin54~43 in TIC1 of main PCB has clock and digital video signal nomal level?
No
Check TIC1 peripheral circuit
Yes
Change main PCB

MEMO

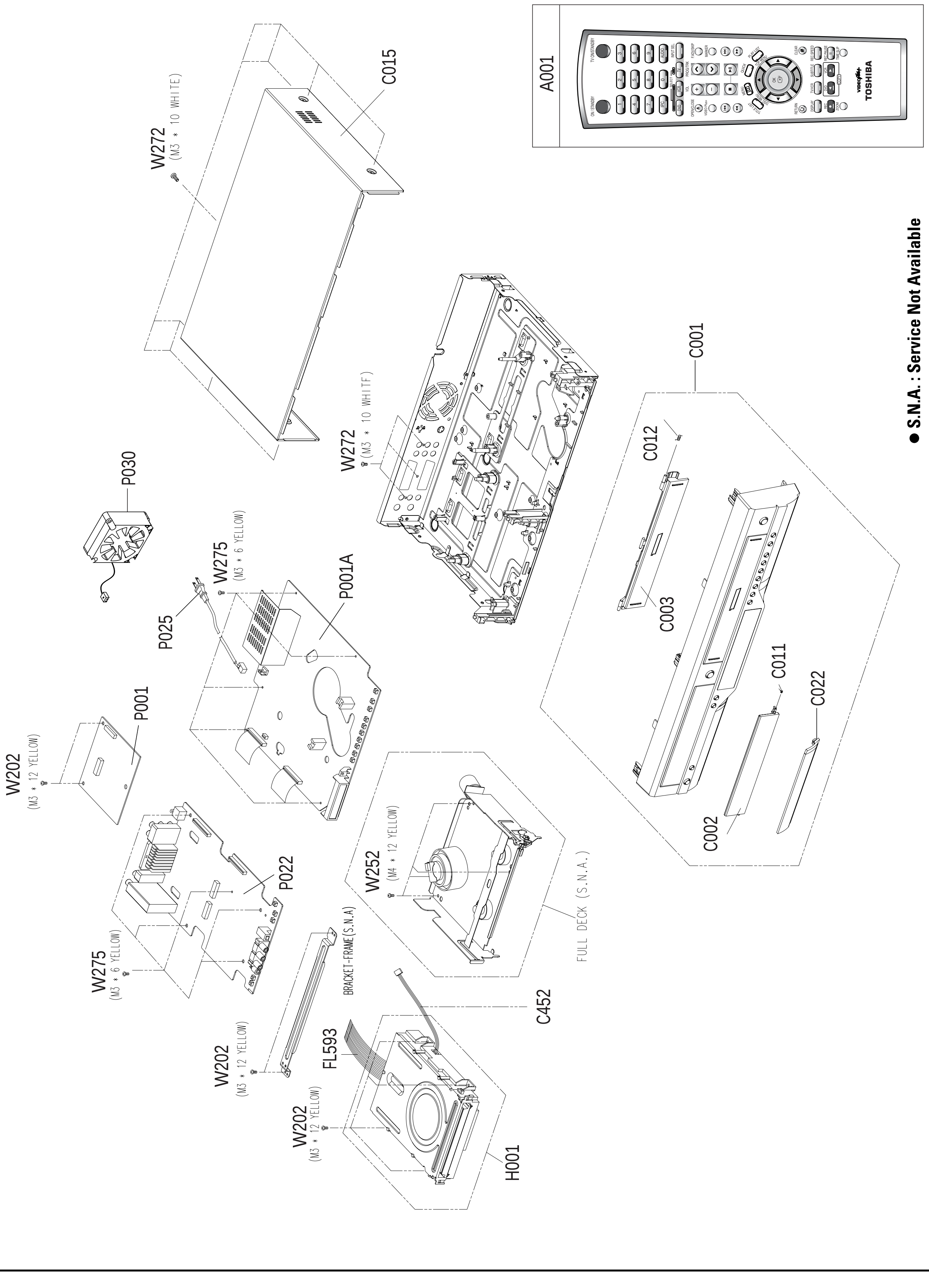
7. Exploded View and Parts List

7-1 Cabinet Assembly - 7-2

7-2 VCR Mechanical Parts (Top Side) - 7-4

7-3 VCR Mechanical Parts (Bottom Side) - 7-6

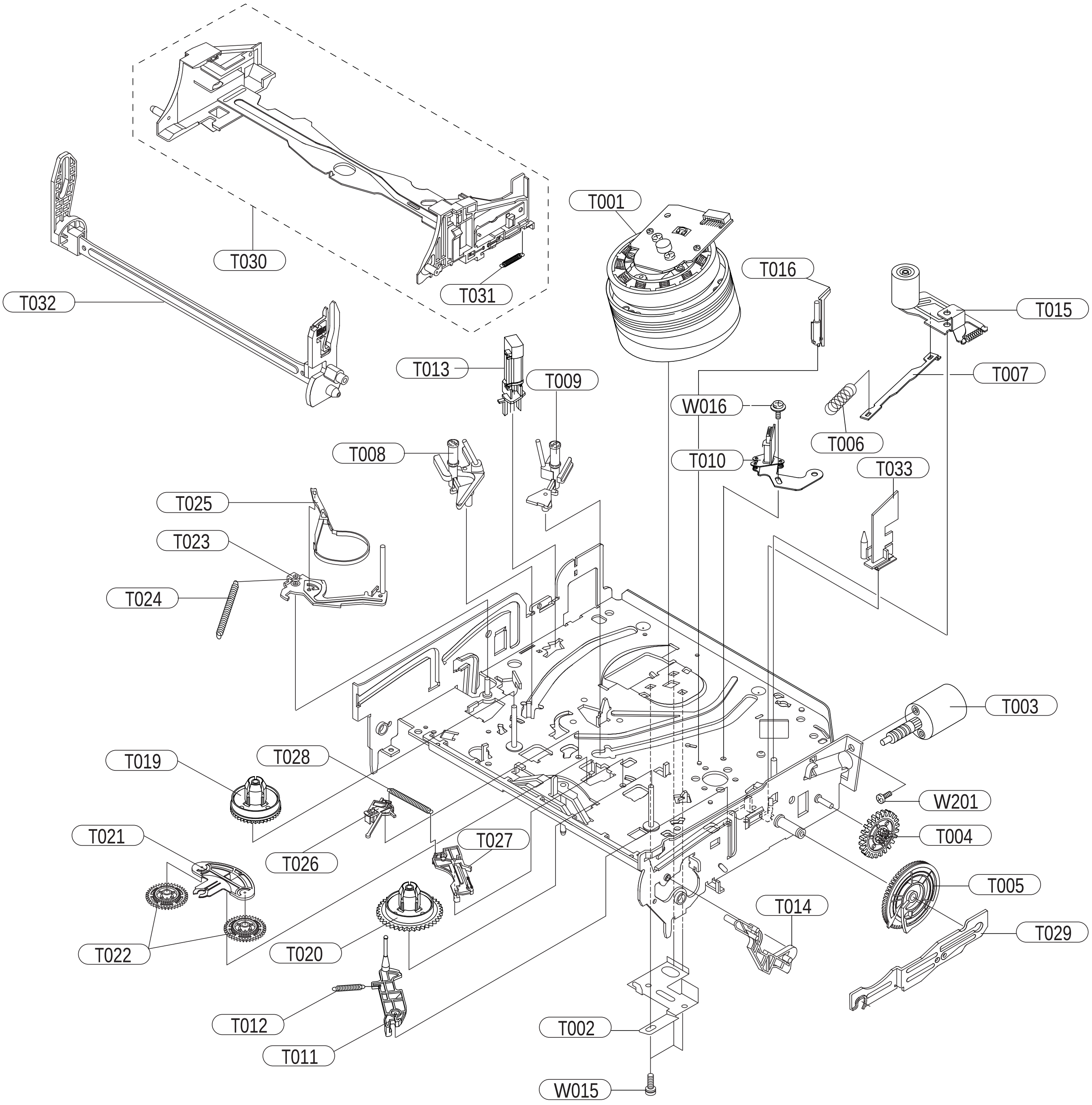
7-1 Cabinet Assembly


A001
C015
W272
(M3 * 10 WHITE)
W272
(M3 * 10 WHITF)
C001
C012
C003
C011
C022
C002
P030
W275
(M3 * 6 YELLOW)
P001A
P025
P001
W202
(M3 * 12 YELLOW)
P022
W252
(M4 * 12 YELLOW)
FULL DECK (S.N.A.)
W275
(M3 * 6 YELLOW)
BRACKET-FRAME(S.N.A)
C452
W202
(M3 * 12 YELLOW)
FL593
W202
(M3 * 12 YELLOW)
H001
TOSHIBA

● **S.N.A. : Service Not Available**

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
A001	AK59-00028E	BY644792	REMOCON-ASSY;D-VR4S-S-TB,TSB,187.5*54,-,	D-VR15-S-TB Only
	AK59-00028G	BY644794	REMOCON-ASSY;D-VR4D-S-TG,TSB,187.5*54,-,	D-VR30-S-TG Only
	AK59-00028G	BY644794	REMOCON-ASSY;D-VR4D-S-TG,TSB,187.5*54,-,	D-VR30-S-TF Only
	AK59-00028F	BY644793	REMOCON-ASSY;D-VR4P-S-TB,TSB,187.5*54,-,	D-VR35-S-TB Only
	AK59-00028E	BY644792	REMOCON-ASSY;D-VR4S-S-TB,TSB,187.5*54,-,	D-VR25-S-TB Only
C001	AK97-01256A	BY731758	ASSY-PANEL FRONT;HIPS94HB GRAY,D-VR15,05	D-VR15-S-TB Only
	AK97-01256D	BY731765	ASSY-PANEL FRONT;HIPS94HB GRAY,D-VR30,05	D-VR30-S-TG Only
	AK97-01256C	BY731760	ASSY-PANEL FRONT;HIPS94HB GRAY,D-VR30/TF	D-VR30-S-TF Only
	AK97-01256E	BY731761	ASSY-PANEL FRONT;HIPS94HB GRAY,D-VR35,05	D-VR35-S-TB Only
	AK97-01256B	BY731759	ASSY-PANEL FRONT;HIPS94HB GRAY,D-VR25,05	D-VR25-S-TB Only
C002	AK64-01236A	BY731757	DOOR-TRAY;D-VR4,ABS94HB,T2.0,H26.5,W5,L1	
C003	AK64-01235A	BY731753	DOOR-CASSETTE;D-VR15,ABS94HB,T2.0,H26.5,	D-VR15-S-TB Only
	AK64-01235D	BY731764	DOOR-CASSETTE;D-VR30/TG,ABS94HB,T2.0,H26	D-VR30-S-TG Only
	AK64-01235C	BY731755	DOOR-CASSETTE;D-VR30/TF,ABS94HB,T2.0,H26	D-VR30-S-TF Only
	AK64-01235E	BY731756	DOOR-CASSETTE;D-VR35,ABS94HB,T2.0,H26.5,	D-VR35-S-TB Only
	AK64-01235B	BY731754	DOOR-CASSETTE;D-VR25,ABS94HB,T2.0,H26.5,	D-VR25-S-TB Only
C011	AK64-00334A	BY734041	DOOR-SPRING;DVD-V3500,SWPB,,,,-,,	
C012	AC61-62032A	BY730093	SPRING ETC-MASK;SV-C130,SUS,4.4,-,-,-,-,	
C015	AK64-01073A	BY731752	CABINET-TOP;DVD-VR320,TEXTURE,T0.525,W59	
C022	AK64-01238A	BY731763	DOOR-FRONT;D-VR15,ABS94HB,T4,H30,W2.5,L1	D-VR15-S-TB Only
	AK64-01238B	BY731762	DOOR-FRONT;D-VR25,ABS94HB,T4,H30,W2.5,L1	D-VR30-S-TG Only
	AK64-01238B	BY731762	DOOR-FRONT;D-VR25,ABS94HB,T4,H30,W2.5,L1	D-VR30-S-TF Only
	AK64-01238A	BY731763	DOOR-FRONT;D-VR15,ABS94HB,T4,H30,W2.5,L1	D-VR35-S-TB Only
	AK64-01238B	BY731762	DOOR-FRONT;D-VR25,ABS94HB,T4,H30,W2.5,L1	D-VR25-S-TB Only
C452	AK39-00049A	BY634843	LEAD CONNECTOR;-,-,-,4,150,WHT,-,SMH200-	
FL593	3809-001702	BY634957	FFC CABLE-FLAT;30V,80C,290mm,40P,0.5mm,U	
H001	AK97-01211A	BY634963	ASSY-ASSY LOADER DRIVE;-,SV-R250,ASSY LO	
P001	AK92-00683C	BY630501	ASSY PCB-MAIN;D-VR15-S-TB,DVD Recorder C	U.K Only
	AK92-00683D	BY630502	ASSY PCB-MAIN;D-VR30-S-TF,DVD Recorder C	Other models Only
P001A	AK92-00666F	BY630496	ASSY PCB-VCR;D-VR4XTF/TSB,DVD Recorder C	D-VR30-S-TF Only
	AK92-00666G	BY630497	ASSY PCB-VCR;D-VR4XTB/TSB,DVD Recorder C	Other models Only
P022	AK92-00667E	BY630498	ASSY PCB-JACK;D-VR4TB/TSB,DVD Recorder C	D-VR15-S-TB Only
	AK92-00667E	BY630498	ASSY PCB-JACK;D-VR4TB/TSB,DVD Recorder C	D-VR35-S-TB Only
	AK92-00667H	BY630505	ASSY PCB-JACK;D-VR4XTG/TSB,DVD Recorder	D-VR30-S-TG Only
	AK92-00667F	BY630499	ASSY PCB-JACK;D-VR4XTF/TSB,DVD Recorder	D-VR30-S-TF Only
	AK92-00667G	BY630500	ASSY PCB-JACK;D-VR4XTB/TSB,DVD Recorder	D-VR25-S-TB Only
P025	3903-000175	BY634814	CBF-POWER CORD;AT,GB,GP2,HOUSING(2P),250	U.K Only
	3903-000176	BY634777	CBF-POWER CORD;AT,EU,CP2,HOUSING(2P),250	Other models Only
P030	3103-001152	BY731622	FAN-DC;DC 12.0V,110mA,1700rpm,0.581m^	
W202	6003-000277	22709856	SCREW-TAPTITE;BH,+,B,M3,L12,ZPC(YEL),SWR	
W252	AC60-12126A	70790218	SCREW-MACHINE;-,-,FE,FZY,BH,-,-,4*12,-,-	
W272	6003-001464	BY731645	SCREW-TAPTITE;BH,+,B,M3,L10,ZPC(WHT)	
W275	6003-001561	BY731750	SCREW-TAPTITE;BH,+,WT,B,M3,L6,ZPC(YEL),S	
	AC39-00017A	BY634253	CABLE-ETC-RF(PAL);-,MALE/FEMALE,1200MM,R	Other models Only
	AC39-00018A	BY634851	CABLE-ETC-RF(SECAM);-,BOTH MALE,1200MM,R	D-VR30-S-TF Only
	AC39-22017Z	BY634852	CABLE-RCA PHONE CORD;-,-,1500M/M,SINGLE,	
	AC39-42001U	BY631148	CABLE-RCA PHONE CORD;DOUBLE,-,1.5MT,BLK,	
	AK68-00676M	BY634959	MANUAL USERS;D-VR4S-S-TB,TSB,ENGLISH,-,M	D-VR15-S-TB Only
	AK68-00676P	BY634965	MANUAL USERS;D-VR4D-S-TG,TSB,GERMAN,ENGL	D-VR30-S-TG Only
	AK68-00676R	BY634961	MANUAL USERS;D-VR4D-S-TF,TSB,FRENCH,-,MO	D-VR30-S-TF Only
	AK68-00676N	BY634960	MANUAL USERS;D-VR4P-S-TB,TSB,ENGLISH,-,M	D-VR35-S-TB Only
	AK68-00676S	BY634962	MANUAL USERS;D-VR25-S-TB,TSB,ENGLISH,-,M	D-VR25-S-TB Only

7-2 VCR Mechanical Parts (Top Side)


T030
T032
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T024
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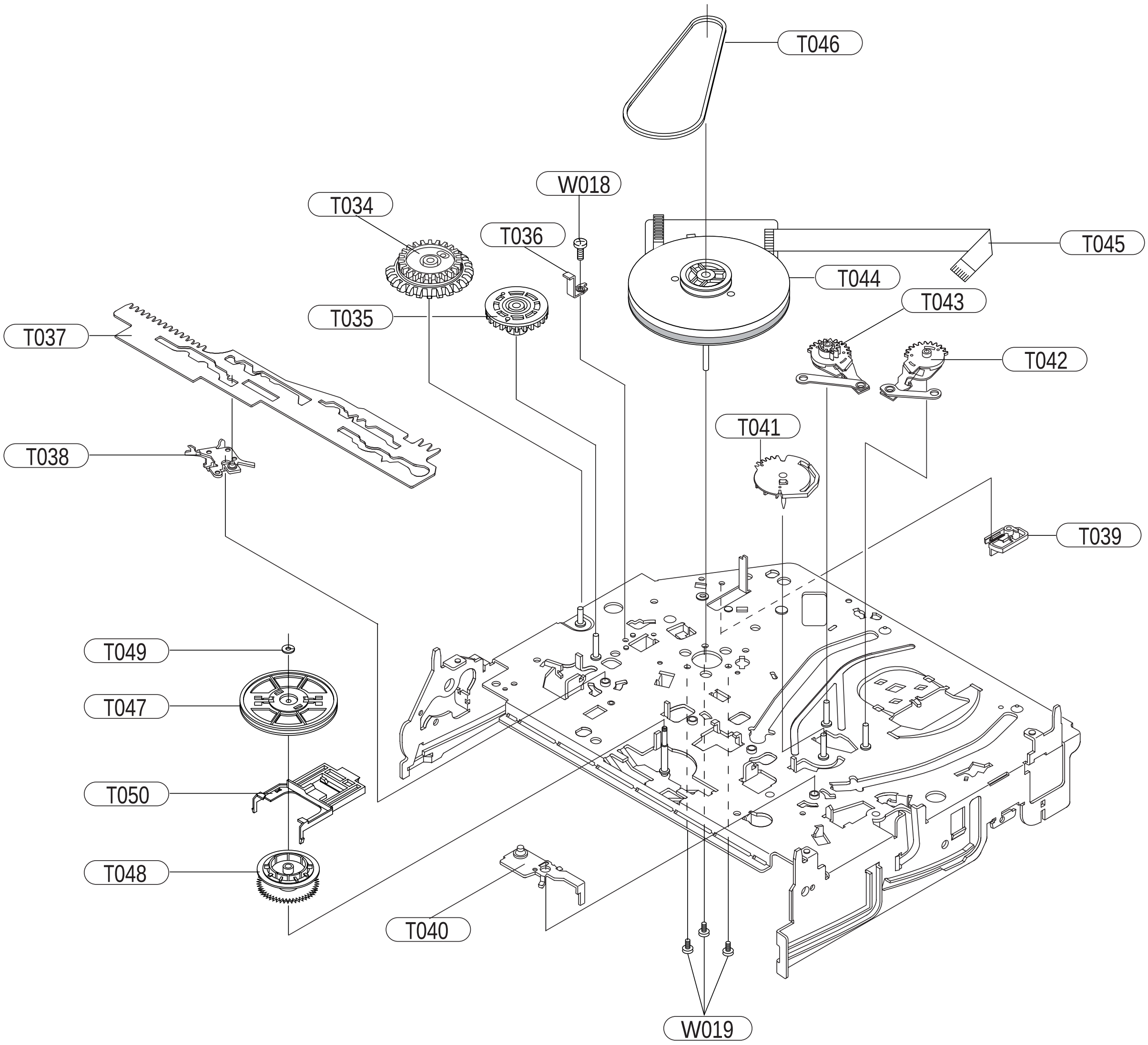
Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
T001	AC97-02537A	BY630503	ASSY-CYLINDER;6SA,CX11A-DS,SECAM 6HD	
T002	AC70-00002A	BY731640	PLATE-GND DECK;X-11,SPTE,T0.3,-,-,-,-	
T003	AC97-01652A	BY630459	ASSY-LOADING MOTOR;SANKYO LOADING MOTOR,	
T003	AC31-00018A	BY631184	MOTOR-LOADING ASSY;-,SCORPIO2(TS-10A),-,	
T004	AC66-00008A	BY730743	GEAR-WORM WHEEL;TS-10,POM,0.8,40,-,NAT,3	
T005	AC66-00011A	BY730745	GEAR-FL CAM;TS-10,POM,0.8,59,-,BLK,48.48	
T006	AC61-00105A	BY730723	SPRING ETC-PINCH DRIVE;TS-10,SUS304-WPB,	
T007	AC61-30180A	BY730244	PLATE-JOINT;X-9,SECC20/20,T0.8,-,-,-,-	
T008	AC66-80142A	BY730124	SLIDER-SUPPLY ASSY;X-9,SUS,-,-,-,SIL,-	
T009	AC66-80141A	BY730123	SLIDER-TAKE UP ASSY;X-9,SUS,-,-,-,SIL,-	
T010	AC97-02517A	BY630467	ASSY-HEAD ACE;ASSY-HEAD ACE,DX11A,DX11A	
T011	AC66-00074A	BY731526	LEVER-GUIDE(#9);TS-9,PPS,-,-,-,-,BLK,KHA	
T012	AC61-60553A	BY730088	SPRING ETC-GUIDE 9;X-9,SUS304-WPB,0.25,-	
T013	AC33-00015A	BY634836	HEAD-FE;HVFHP0050A,PBT3300,2PIN,NATURA	
T014	AC66-00083A	BY731636	LEVER-FL DOOR;X-11,POM(K300),-,-,-,-,BLU	
T015	AC97-02293A	BY731528	ASSY-UNIT PINCH;SECC+SUS304,TS-10,FOR X-	
T016	AC97-02215A	BY630397	ASSY-POST #8 GUIDE;SUS303+POM(M90-44)EQ,	
T019	AC66-10267A	BY730102	REEL-DISK S;X-9,POM,-,-,-,-,-,-	
T020	AC66-10268A	BY730103	REEL-DISK T;X-9,POM,-,-,-,-,-,-	
T021	AC66-30524A	BY730112	LEVER-IDLER;-,POM,-,-,-,-,BLK,-	
T022	AC66-00039A	BY730760	GEAR-IDLE;TS-10,PET K3372,0.5,-,-,NTR,28	
T023	AC66-00035A	BY730759	LEVER-TENSION ASS'Y;TS-10,SECC E20/20+SU	
T024	AC61-00107A	BY730725	SPRING ETC-TENSION LEVER;TS-10,SUS304-WP	
T025	AC69-00104A	BY730762	BAND-BRAKE ASS'Y;TS-10,-,-,-,-,-,-	
T026	AC66-30550A	BY730121	LEVER-S.BRAKE ASSY;-,POM+SUS,-,-,-,X-9	
T027	AC66-30549A	BY730120	LEVER-T.BRAKE ASSY;-,POM+SUS,-,-,-,X-9	
T028	AC61-00106A	BY730724	SPRING ETC-BRAKE;TS-10,SUS304-WPB,-,-,-,	
T029	AC66-00020A	BY730750	SLIDER-FL DRIVE;TS-10,SECC ,T1.0,-,-,SIL	
T030	AC97-02323A	BY731660	ASSY-HOLDER FL CASSETTE;SECC+POM,X-11,Fo	
T031	AC61-60561A	BY730091	SPRING ETC-FL.LEVER-LR;X-9,SUS304 WPB,OD	
T032	AC97-02324A	BY731661	ASSY-LEVER FL ARM;SECC+POM,X-11,For X-11	
T033	AC61-50658A	BY730086	GUIDE-CASS. DOOR;X-9,POM,-,-,-,NTR	
W015	6006-001092	BY634416	SCREW-MACHINE;WS,PH,+,M3.0,L6.0,ZPC(YEL)	
W016	6006-001154	BY731647	SCREW-TAPTITE;WSP,PH,+,M2.6,L5.6,ZPC(YEL	
W201	6001-001711	BY731536	SCREW-MACHINE;PH,+,M3,L3.3,ZPC(YEL)	

7-3 VCR Mechanical Parts (Bottom Side)


T046
W018
T034
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Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
T034	AC66-00076A	BY731626	GEAR-JOINT 1;X-11,POM(K300),-,-,-,BLUE,-	
T035	AC66-00077A	BY731627	GEAR-JOINT 2;X-11,POM(K300),-,-,-,BLUE,-	
T036	AC61-00338A	BY731599	BRACKET-GEAR;X-11,SECC,T0.8,W20,L20,NTR,	
T037	AC66-00075A	BY731651	SLIDER-CAM;X-11,SECC ,T1.2,-,-,SIL,-	
T038	AC66-00017A	BY730748	LEVER-PINCH DRIVE;TS-10,SECC E20/20,1.0	
T039	AC70-00003A	BY634837	HOOK-CAPSTAN;-,-,L10,W10,H10,POM(M90-44)	
T040	AC66-00016A	BY730747	LEVER-TENSION DRIVE;TS-10,SECC E20/20,1	
T041	AC66-00078A	BY731628	GEAR-LOADING DRIVE;X-11,POM(K300),-,-,-,	
T042	AC97-02195A	BY630393	ASSY-LEVER LOADING S;SECC+POM+SUS,X-11,F	
T043	AC97-02196A	BY630394	ASSY-LEVER LOADING T;SECC+POM+SUS,X-11,F	
T044	3101-001419	BY634900	MOTOR-CAPSTAN;-,-,12V,90mA	
T045	3809-001270	BY634670	CABLE-FLAT;30V,80C,140MM,10P,1.25MM,UL28	
T046	AC66-60051A	BY730122	BELT-PULLEY;-,5CM-70,2 * 2,-,71.3,-,X-9	
T047	AC61-21012A	BY730084	HOLDER-CLUTCH ASSY;X-9,ABS,-,-,-,BLK,-	
T048	AC66-20581A	BY730111	GEAR-CENTER ASSY;X-9,POM,M=O.5,-,-,GRY,-	
T049	AC60-30306A	BY730076	FASTENER-WASHER SLIT;-,-,ID2.1,OD5.0,T0.	
T050	AC66-00006A	BY730742	LEVER-UP DOWN;TS-10,POM,-,-,-,-,NAT,-	
W018	6003-001450	BY731520	SCREW-TAPTITE;PH,+,S,M2.6,L5,ZPC(YEL)	
W019	6003-000108	BY731519	SCREW-TAPTITE;BH,+,B,M2.6,L6,ZPC(YEL),SW	

MEMO

8. Electrical Parts List

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
P001	AK92-00683D	BY630502	ASSY PCB-MAIN;D-VR30-S-TF,DVD Recorder C	Other models Only
	AK92-00683C	BY630501	ASSY PCB-MAIN;D-VR15-S-TB,DVD Recorder C	U.K Only
AC101	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC104	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
AC105	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC816	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
AC818	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
AC820	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC821	2203-001554	BY130450	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	
AC822	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
AC823	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC824	2203-001554	BY130450	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	
AC831	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
AC891	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC892	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC908	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC911	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
AC912	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC913	2402-000007	BY130502	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	
AC914	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC915	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
AC917	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
AC918	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC919	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
AE2	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
AE3	2402-000179	BY130505	C-AL,SMD;47uF,20%,16V,GP,TP,6.6x6.6x5.4	
AIC1	1002-001294	BY631221	IC-D/A CONVERTER;PCM1742KE,24BIT,TSSOP,1	
AIC3	1203-002178	BY631234	IC-POSI.FIXED REG.;1563,SOP,7P,173MIL,PL	
AIC81	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AIC82	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AIC9	1002-001387	BY631222	IC-A/D CONVERTER;PCM1802,24BIT,SSOP,20P,	
AR10	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR11	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR12	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR13	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR14	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR15	2007-000120	BY230350	R-CHIP;680ohm,5%,1/10W,TP,1608	
AR16	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR2	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR20	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
AR3	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
AR4	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR5	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR51	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR52	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR6	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR7	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
AR8	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR801	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR802	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR803	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR804	2007-000087	BY230284	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
AR805	2007-000126	BY230390	R-CHIP;4.3Kohm,5%,1/10W,TP,1608	
AR806	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR807	2007-000126	BY230390	R-CHIP;4.3Kohm,5%,1/10W,TP,1608	
AR808	2007-000087	BY230284	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	
AR809	2007-000080	BY230343	R-CHIP;2Kohm,5%,1/10W,TP,1608	
AR811	2007-000080	BY230343	R-CHIP;2Kohm,5%,1/10W,TP,1608	
AR812	2007-000080	BY230343	R-CHIP;2Kohm,5%,1/10W,TP,1608	
AR813	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR814	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR881	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR882	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR894	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR895	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR9	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
ATAR1	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATAR2	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATAR3	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATAR4	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATCN1	3708-001935	BY634823	CONNECTOR-FPC/FFC/PIC;40P,0.5mm,SMD-S,Sn	
C110	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C111	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C112	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C115	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C117	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C119	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C123	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
C124	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
C125	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C126	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C127	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C128	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C129	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C130	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C140	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C141	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C142	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C143	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C144	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C145	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C146	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C147	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C150	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C166	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C167	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C168	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C169	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C171	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C173	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
C174	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
C177	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C178	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C179	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C183	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C184	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C185	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C210	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C214	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C215	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C217	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C218	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C219	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
C220	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C222	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C223	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C224	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C225	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C226	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C227	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C228	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C230	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C231	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C232	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C78	2203-000746	BY130517	C-CER,CHIP;0.03NF,5%,50V,C0G,TP,1608	
C79	2203-000746	BY130517	C-CER,CHIP;0.03NF,5%,50V,C0G,TP,1608	
CA1	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
CA2	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
CC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CL1	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
CL2	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
CL3	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
CN1	3710-002075	BY634832	CONNECTOR-SOCKET;30P,2R,2MM,SMD,SnPb,BLK	
CN2	3710-002075	BY634832	CONNECTOR-SOCKET;30P,2R,2MM,SMD,SnPb,BLK	
CN3	3711-005595	BY634833	CONNECTOR-SOCKET;12P,2R,2MM,SMD-S,-,BLK	
CR1	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
CR2	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
CR3	2007-000083	BY230344	R-CHIP;3Kohm,5%,1/10W,TP,1608	
DC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC14	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC16	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC18	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC19	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC20	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC21	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC22	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC23	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC24	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC25	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC66	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC9	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DE1	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
DE2	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
DE3	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
DE4	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
DE6	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
DIC1	1205-002442	BY631249	IC-CODEC;DMN-8602,BGA,308P,27x27mm,PLAS	
DIC2	0801-002522	BY631215	IC-CMOS LOGIC;74VHC541,BUFFER/LINE DRIVE	
DIC3	1107-001273	BY631230	IC-FLASH MEMORY;29DL323,4Mx8/2Mx16,TSOP,	
DIC4	1106-001471	BY631229	IC-SRAM;K6X8016T3B,512Kx16Bit,TSOP2,44	
DIC5	0801-002741	BY631218	IC-CMOS LOGIC;BU4053BCFV,MUX,SSOP,16P,17	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
DIC6	0802-001115	BY631219	IC-CMOS LOGIC;74ALVCH16373,D LATCH,TSSOP	
DIC7	0801-002587	BY631216	IC-CMOS LOGIC;74LVX541,8BIT BUFFER/DRIVE	
DIC8	1103-001134	BY631225	IC-EEPROM;24C040,512x8,SOP,8P,5.13x3.95m	
DL1	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
DR1	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR10	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR2	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR21	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR28	2007-007332	BY230364	R-CHIP;1.18Kohm,1%,1/8W,TP,2012	
DR29	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR3	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR30	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR31	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR32	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR33	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR34	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR35	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR36	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR37	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR38	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR39	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR4	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR40	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR41	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR42	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR43	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR44	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR45	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR46	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR47	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR48	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR49	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR5	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR50	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR51	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR52	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR53	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR54	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR55	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR56	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR57	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR58	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR59	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR6	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR60	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR61	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR62	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR63	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR64	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR65	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR66	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
DR67	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR68	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR69	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
DR7	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR71	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR72	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR74	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR75	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR76	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR77	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
DR78	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR79	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR8	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR80	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR81	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
DR82	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
DR84	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR85	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR86	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR87	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR88	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR89	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR9	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR90	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR91	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR92	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR95	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR96	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR97	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR98	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
FB23	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
PC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC11	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC14	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC16	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC18	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
PC19	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC20	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC21	2203-000332	BY130461	C-CER,CHIP;0.012NF,5%,50V,C0G,TP,1608	
PC3	2203-000384	BY130521	C-CER,CHIP;0.015NF,5%,50V,C0G,TP,1608	
PC4	2203-000384	BY130521	C-CER,CHIP;0.015NF,5%,50V,C0G,TP,1608	
PC5	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC7	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC9	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PE1	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
PE2	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
PE3	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
PE4	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
PE5	2402-000170	BY130503	C-AL,SMD;1uF,20%,50V,GP,TP,4.3x4.3x5.4,	
PIC1	1205-001988	BY631248	IC-DATA COMM./GEN.;TSB41AB1-PAP,QFP,64P,	
PL1	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
PL2	3301-000353	BY330075	BEAD-SMD;120ohm,2x1.25x0.9mm,-,TP,-,-,-	
PL3	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
PR1	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
PR10	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
PR12	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR13	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR14	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR15	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR16	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR17	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR18	2007-000965	BY230303	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	
PR19	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
PR2	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR20	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
PR21	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
PR22	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
PR23	2007-001056	BY230273	R-CHIP;6.2Kohm,5%,1/10W,TP,1608	
PR24	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
PR4	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
PR5	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
PR60	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
PR9	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
PRA1	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
PRA2	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
PY1	2801-004021	BY633022	CRYSTAL-SMD;24.576MHz,20ppm,28-AAN,12pF,	
R1	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
R213	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R214	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R215	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R216	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R217	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R218	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R219	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R220	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R221	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R222	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
R223	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R224	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R225	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R226	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
R227	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R228	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
R229	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R230	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R232	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R234	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R237	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R238	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R239	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R240	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R241	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R242	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R243	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R246	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R247	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R248	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R254	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R256	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R257	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R67	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
R68	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
R69	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
R70	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,TP,1608	
RC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC5	2203-001683	BY130486	C-CER,CHIP;0.068nF,5%,50V,NP0,TP,1608	
RE1	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
RE2	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
RE3	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
RE4	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
RIC1	1203-003182	BY631242	IC-POSI.FIXED REG.;LP3965,TO-263,5P,10.1	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
RIC2	1203-002612	BY631236	IC-POSI.ADJUST REG.;3966,TO-263,5P,10.16	
RL1	2703-000398	BY330078	INDUCTOR-SMD;10uH,10%,3225	
RL2	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL3	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL5	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL6	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL7	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RP1	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP10	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP12	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP14	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP15	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP17	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP18	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP19	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP20	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP21	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP22	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP23	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP24	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP25	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP26	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP27	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP28	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP29	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP3	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP30	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP31	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP34	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP5	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP7	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RR3	2007-000962	BY230394	R-CHIP;5.1Kohm,1%,1/10W,TP,1608	
RR4	2007-000300	70795516	R-CHIP;10Kohm,5%,1/8W,TP,2012	
TC10	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,2012	
TC11	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,2012	
TC12	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,2012	
TC13	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,2012	
TC14	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,2012	
TC15	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,2012	
TC16	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
TC17	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
TC18	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC19	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC20	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC21	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC22	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC23	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC24	2203-002793	BY130032	C-CER,CHIP;1000nF,+80-20%,25V,Y5V,2012	
TC25	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC26	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC27	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC28	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC29	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC30	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC31	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC32	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC33	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC34	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC35	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC51	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC52	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
TD1	0402-000309	BY430128	DIODE-RECTIFIER;1SR154-400,400V,1A,SOD-1	
TE1	2402-000007	BY130502	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	
TE2	2402-000007	BY130502	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	
TE3	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
TE4	2402-001059	BY130556	C-AL,SMD;220UF,20%,6.3V,-,TP,6X6.6X6.6	
TIC1	1204-002436	BY631322	IC-VIDEO DECODER;TW9909,TQFP,80P,12x12mm	
TL1	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
TL2	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
TL3	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
TL4	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
TNR10	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
TNR11	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
TR10	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
TR11	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
TR12	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR13	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TR14	2007-000109	BY130423	R-CHIP;1Mohm,5%,1/10W,TP,1608	
TR15	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
TR16	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
TR17	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
TR19	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
TR20	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
TR21	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
TR22	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR75	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
TX1	2801-004095	BY633031	CRYSTAL-SMD;27MHz,20ppm,28-ABY,14pF,30oh	
U23	1105-001530	BY631228	IC-DRAM;K4H561638,16Mx16Bit,TSOPII,66P	
U24	1105-001530	BY631228	IC-DRAM;K4H561638,16Mx16Bit,TSOPII,66P	
U25	1203-003038	BY631238	IC-POSI.ADJUST REG.;LP2995,SO,8P,4.9x3.9	
U34	0401-000008	BY430108	DIODE-SWITCHING;DAN217,80V,100MA,SOT-23,	
Y3	2801-004182	BY633025	CRYSTAL-SMD;13.5MHZ,10PPM,28-AAN,24PF,60	
P001A	AK92-00666F	BY630496	ASSY PCB-VCR;D-VR4XTF/TSB,DVD Recorder C	D-VR30-S-TF Only
	AK92-00666G	BY630497	ASSY PCB-VCR;D-VR4XTB/TSB,DVD Recorder C	Other models Only
C315	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C319	2203-000843	BY130518	C-CER,CHIP;39nF,10%,25V,X7R,TP,1608,-	
C320	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C321	2203-002398	BY130454	C-CER,CHIP;22nF,10%,50V,X7R,TP,1608	
C324	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C327	2203-001211	BY130448	C-CER,CHIP;8.2nF,10%,50V,X7R,TP,1608	
C328	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C329	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C330	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C331	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C332	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C335	2203-001652	BY130452	C-CER,CHIP;470nF,+80-20%,16V,Y5V,TP,1608	
C337	2203-001652	BY130452	C-CER,CHIP;470nF,+80-20%,16V,Y5V,TP,1608	
C338	2203-002398	BY130454	C-CER,CHIP;22nF,10%,50V,X7R,TP,1608	
C343	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
C344	2203-000315	BY130441	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	
C345	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
C347	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
C348	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C349	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
C350	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C392	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C3A08	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C3A09	2203-001103	BY130447	C-CER,CHIP;6.8nF,10%,50V,X7R,TP,1608,-	
C3A10	2203-001211	BY130448	C-CER,CHIP;8.2nF,10%,50V,X7R,TP,1608	
C3A15	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C3A18	2203-001126	BY130478	C-CER,CHIP;0.68nF,10%,50V,X7R,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
C3A21A	2203-001554	BY130450	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	
C3A24	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C3A29	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C3A70	2203-001126	BY130478	C-CER,CHIP;0.68nF,10%,50V,X7R,1608	
C3S03	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	D-VR30-S-TF Only
C3S05	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	D-VR30-S-TF Only
C3S07	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	D-VR30-S-TF Only
C3S08	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	D-VR30-S-TF Only
C3S11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	D-VR30-S-TF Only
C3S12A	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	D-VR30-S-TF Only
C3S14A	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	D-VR30-S-TF Only
C3S15	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	D-VR30-S-TF Only
C502	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C506	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C508	2203-000888	BY130483	C-CER,CHIP;4.7nF,10%,50V,X7R,TP,1608	
C511	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C513	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C517	2203-000888	BY130483	C-CER,CHIP;4.7nF,10%,50V,X7R,TP,1608	
C519	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C522	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C523	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C530	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C604	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C605	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C606	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C607	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C614	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C623	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C626	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
C627	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
C628	2203-000681	BY130445	C-CER,CHIP;0.027NF,5%,50V,C0G,TP,1608	
C633	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C635	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
C636	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
C637	2203-002041	BY130477	C-CER,CHIP;0.47nF,10%,50V,X7R,TP,1608	
C639	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
C640	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C645	2203-000357	BY130442	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
C646	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C657	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C658	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C659A	2203-001140	BY130526	C-CER,CHIP;68nF,10%,16V,X7R,TP,1608	
C691	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C695	2203-000357	BY130442	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
C696	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
C6P02	2203-000315	BY130441	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	
C6P04	2203-000681	BY130445	C-CER,CHIP;0.027NF,5%,50V,C0G,TP,1608	
C6P05	2203-000681	BY130445	C-CER,CHIP;0.027NF,5%,50V,C0G,TP,1608	
C6P08	2203-001071	BY130465	C-CER,CHIP;0.056NF,5%,50V,C0G,TP,1608	
C6P10	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,1608	
C6P13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C702	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C703	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C822A	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
IC301	1204-002140	BY631205	IC-VIDEO PROCESS;LA71750EM-MPB-E,QFP,100	
IC3S01	1204-001921	BY631190	IC-CHROMA;LA70100M,SOP,30P,375MIL,PLASTI	D-VR30-S-TF Only
IC501	1204-001920	BY631189	IC-AUDIO PROCESSOR;LA72646M,QFP,80P,14x1	
IC601	AC09-00274A	BY631286	IC MICOM;UPD78F4928GF-3BA,FRESH ROM,100	
IC6P01	1204-001796	BY631284	IC-OSD PROCESSOR;LC74759JM-9820,MFP,24P,	
IC701	1003-001561	BY631280	IC-LED DRIVER;PT6961,SOP,32P,300MIL,-,40	
J330	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
J905	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
J910	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
J911	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
J913	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
J914	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
Q302	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
Q601	0504-000129	70795815	TR-DIGITAL;KSR1104,NPN,200mW,47K/47K,SOT	
R1S36	2007-000490	BY230392	R-CHIP;2.2Kohm,1%,1/8W,TP,2012	
R315	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
R316	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
R320	2007-000458	BY230372	R-CHIP;18Kohm,5%,1/10W,TP,1608	
R321	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R322	2007-000458	BY230372	R-CHIP;18Kohm,5%,1/10W,TP,1608	
R323	2007-000125	BY230296	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	
R324	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	D-VR30-S-TF Only
R327	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R328	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
R329	2007-000080	BY230343	R-CHIP;2Kohm,5%,1/10W,TP,1608	
R330	2007-000087	BY230284	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	
R331	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
R333	2007-001039	70795708	R-CHIP;56Kohm,5%,1/8W,TP,2012	
R334	2007-000123	BY230306	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	
R336	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R350	2007-000123	BY230306	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	D-VR30-S-TF Only
R360	2007-001196	BY230309	R-CHIP;820Kohm,5%,1/10W,TP,1608	
R372	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R373	2007-000093	BY230308	R-CHIP;20Kohm,5%,1/10W,TP,1608	
R380	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R3A05	2007-000616	BY230300	R-CHIP;24Kohm,5%,1/10W,TP,1608	
R3A06	2007-000539	BY230357	R-CHIP;200ohm,5%,1/10W,TP,1608	
R3A07	2007-000133	BY230297	R-CHIP;330Kohm,5%,1/10W,TP,1608	
R3A08	2007-000091	BY230286	R-CHIP;12Kohm,5%,1/10W,TP,1608	
R3A09	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R3A11	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R3A12	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R3A13	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
R3A14	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R3A16	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R3A17	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R3A18	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R3A23	2007-000091	BY230286	R-CHIP;12Kohm,5%,1/10W,TP,1608	
R3A24	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R3A26	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R3A28	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R3A51	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R3A60	2007-000704	BY230374	R-CHIP;3.6Kohm,5%,1/10W,TP,1608	
R3A70	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R3S01	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	D-VR30-S-TF Only
R509	2007-000087	BY230284	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	
R510	2007-000913	BY230302	R-CHIP;43Kohm,5%,1/10W,TP,1608	
R511	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R517	2007-000087	BY230284	R-CHIP;6.8Kohm,5%,1/10W,TP,1608	
R518	2007-000913	BY230302	R-CHIP;43Kohm,5%,1/10W,TP,1608	
R545	2007-000512	BY230373	R-CHIP;2.4Kohm,5%,1/10W,TP,1608	
R546	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R547	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R570	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R571	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R610	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R611	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R614	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
R615	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R617	2007-001038	BY230376	R-CHIP;56Kohm,1%,1/10W,TP,1608	
R620	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R621	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R630	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R631	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R634	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R635	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R640	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R657	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R661	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
R666	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R667	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R670	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R671	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R672	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R678	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R679	2007-000572	70795525	R-CHIP;220ohm,5%,1/8W,TP,2012	
R682	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R685	2007-000086	BY230283	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
R688	2007-000129	BY230307	R-CHIP;27Kohm,5%,1/10W,TP,1608	
R691	2007-000572	70795525	R-CHIP;220ohm,5%,1/8W,TP,2012	
R698	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R6P05	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R6P07	2007-000539	BY230357	R-CHIP;200ohm,5%,1/10W,TP,1608	
R6P08	2007-000118	BY230293	R-CHIP;390ohm,5%,1/10W,TP,1608	
R6P09	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R6P10	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
R703	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R704	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
R711	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
BD1S01	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
C1P103	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C1P104	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C1P105	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C1P107	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
C1P108	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C1P109	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C1P110	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C1P111	2401-001249	BY130496	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	
C1P120	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C1P121	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C1P122	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C1P123	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C1P124	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C1P125	2401-000414	BY130273	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C1P126	2401-000414	BY130273	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C1P127	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C1P128	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C1P129	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C1S07	2201-000012	BY130519	C-CERAMIC,DISC;0.22nF,10%,1000V,Y5P,-,6.	
C1S08	2305-001029	BY130226	C-FILM,LEAD-PEF;10nF,10%,630V,TP,12x9x12	
C1S09	2401-001186	BY130551	C-AL;33uF,20%,35V,GP,TP,6.3x7,2.5	
C1S10	2401-001186	BY130551	C-AL;33uF,20%,35V,GP,TP,6.3x7,2.5	
C1S11	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C1S12	2301-000481	BY130555	C-FILM,LEAD-PEF;10nF,5%,100V,TP,6.5x3.4x	
C1S32	2401-000385	70795431	C-AL;10uF,20%,100V,GP,TP,6.3x11,5	
C1S34	2401-001126	BY130045	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	
C1S37	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
C1S38	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
C1S39	2301-000129	70796098	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10X9X4.3	

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C1S41	2401-003059	BY130050	C-AL;1000UF,20%,16V,WT,TP,10X16,5	
C317	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C318	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C322	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C325	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C326	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C333	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C339	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C340	2401-004014	BY130554	C-AL;4.7uF,20%,16V,-,TP,4x5,2.5	
C341	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C342	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C351	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C352	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C353	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C354	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C3A01	2401-003122	70795626	C-AL;4.7uF,20%,50V,LL,TP,5X7,5	
C3A02	2401-000922	BY130044	C-AL;22uF,20%,16V,GP,TP,5x5,5	
C3A11	2301-000174	BY130375	C-FILM,LEAD-PEF;15nF,5%,100V,TP,7.2x4.0x	
C3A12	2401-000922	BY130044	C-AL;22uF,20%,16V,GP,TP,5x5,5	
C3A14	2202-000263	BY130172	C-CERAMIC,MLC-AXIAL;470pF,10%,50V,Y5P,TP	
C3A16	2401-003122	70795626	C-AL;4.7uF,20%,50V,LL,TP,5X7,5	
C3A17	2401-000414	BY130273	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C3A23	2401-002069	BY130245	C-AL;33uF,20%,16V,GP,TP,6.3x5,5	
C3A30	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C3A40	2401-000414	BY130273	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C3A41	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C3S01	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C3S02	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C3S04	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C3S06	2401-001324	BY130534	C-AL;0.47UF,20%,50V,GP,BK,3X5,2.5	
C3S09	2401-001324	BY130534	C-AL;0.47UF,20%,50V,GP,BK,3X5,2.5	
C3S10	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C3S14	2401-000665	BY130424	C-AL;2.2uF,20%,50V,GP,TP,3.5x5,5	
C501	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C503	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
C504	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C505	2401-001249	BY130496	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	
C507	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
C510	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C518	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
C520	2401-001249	BY130496	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	
C521	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C524	2401-001249	BY130496	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	
C525	2401-001249	BY130496	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	
C526	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C527	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C529	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C537	2401-000665	BY130424	C-AL;2.2uF,20%,50V,GP,TP,3.5x5,5	
C538	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
C541	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C603	2401-000360	BY130317	C-AL;100uF,20%,50V,GP,TP,8x11.5,5	
C607A	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C609	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C610	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C613	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C638	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C641	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
C642	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C661	2202-002055	BY130286	C-CERAMIC,MLC-AXIAL;47nF,+80-20%,50V,Y5V	
C662	2401-002095	BY130048	C-AL;47uF,20%,25V,GP,TP,6.3x5,5	
C663	2401-000118	70796210	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
C688	2401-001507	70795621	C-AL;47uF,20%,16V,GP,TP,6.3x5,5	
C6P01	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C6P11	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C6P12	2401-002095	BY130048	C-AL;47uF,20%,25V,GP,TP,6.3x5,5	
C6P15	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C704	2401-000118	70796210	C-AL;1000uF,20%,10V,GP,TP,10x12.5,5	
C706	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C708A	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
D1	0402-001111	BY430129	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
D1P101	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1P102	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1P103	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1P106	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P107	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P108	0402-000165	BY430121	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	
D1P111	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P112	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1P130	0402-000165	BY430121	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	
D1S05	0402-000012	BY430047	DIODE-RECTIFIER;UF4007,1KV,1A,DO-41,TP	
D1S06	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1S07	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
D1S34	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
D1S35	0402-001194	BY430010	DIODE-RECTIFIER;SHG2D,200V,2A,-,TP	
D1S37	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
D1S39	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D2	0402-001111	BY430129	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
D3	0402-001111	BY430129	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
D301	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D302	0402-000165	BY430121	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	
D4	0402-001111	BY430129	DIODE-RECTIFIER;1N5397GP,600V,1.5A,-,TP	
D502	0402-000165	BY430121	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	
D603	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D604	0402-000165	BY430121	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	
D620	0402-000165	BY430121	DIODE-RECTIFIER;1N5819,40V,1A,DO-41,TP	
D688	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D701	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D702	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D703	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D704	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D706	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D707	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D708	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D709	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
FL3A01	2702-000166	70795862	INDUCTOR-RADIAL;47uH,5%,6.0x6.4mm	
IC1S03	AC14-12006D	70795271	IC;KA431Z,TO-92,TAPING	
IC604	AC14-12006C	70795269	IC;KA7533,DIP,-	
L1P02	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L1P101	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L1S32	AC27-12001N	70796213	COIL CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	
L301	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L301A	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L302	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L304	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	
L370	2701-000113	70795159	INDUCTOR-AXIAL;100UH,5%,2534	
L3A01	2702-000120	70795171	INDUCTOR-RADIAL;15000uH,5%,6.2x7.4mm	
L3A02	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L3A03	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L3A70	2702-000120	70795171	INDUCTOR-RADIAL;15000uH,5%,6.2x7.4mm	
L3S01	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L501	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L502	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
L602	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L603	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L605	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L6P01	2702-000108	70795168	INDUCTOR-RADIAL;100uH,5%,6.0x6.4mm	
L6P03	2701-000160	70795162	INDUCTOR-AXIAL;22uH,5%,2434	
L6P05	2701-000165	BY330052	INDUCTOR-AXIAL;27uH,5%,2434	
L702	2702-000108	70795168	INDUCTOR-RADIAL;100uH,5%,6.0x6.4mm	
Q1P101	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P102	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P103	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P104	0501-000398	70795136	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q1P105	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P106	0504-000142	70693084	TR-DIGITAL;KSR2001,PNP,300MW,4.7K/4.7K,T	
Q1P107	0501-000398	70795136	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q1P108	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P109	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P110	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P111	0501-000610	70693410	TR-SMALL SIGNAL;KSA928A-Y,PNP,1W,TO-92L,	
Q1P112	0501-000610	70693410	TR-SMALL SIGNAL;KSA928A-Y,PNP,1W,TO-92L,	
Q1P113	0501-000610	70693410	TR-SMALL SIGNAL;KSA928A-Y,PNP,1W,TO-92L,	
Q3A01	0501-000398	70795136	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q3A02	0501-000303	70795134	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q3A03	0501-000442	70795142	TR-SMALL SIGNAL;KTC3203-Y,NPN,400mW,T0-9	
Q3A04	0501-000442	70795142	TR-SMALL SIGNAL;KTC3203-Y,NPN,400mW,T0-9	
Q3A05	0501-000442	70795142	TR-SMALL SIGNAL;KTC3203-Y,NPN,400mW,T0-9	
Q3A06	0501-000303	70795134	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q6P01	0501-000303	70795134	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
Q6P02	0501-000303	70795134	TR-SMALL SIGNAL;KSA733,PNP,250mW,TO-92,T	
R1P102	2001-000008	70795014	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P104	2001-000027	70795659	R-CARBON;100OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R1P105	2001-000605	70795609	R-CARBON;3.6KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P107	2001-000734	70795040	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P108	2001-000812	BY230038	R-CARBON;5.6KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P109	2001-000812	BY230038	R-CARBON;5.6KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P110	2001-000449	70795020	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P121	2001-000062	70796173	R-CARBON;470OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R1P122	2001-000449	70795020	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P123	2001-000613	70795036	R-CARBON;3.9KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P125	2001-000449	70795020	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P131	2001-000855	BY230025	R-CARBON;560OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R1S05	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S06	2001-000869	BZ230057	R-CARBON;56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S07	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S08	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S09	2001-000598	70795320	R-CARBON;3.3OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S10	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S11	2001-000449	70795020	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1S12	2001-000527	70795018	R-CARBON;22OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S13	2005-001198	BY230337	R-WIRE WOUND,NON;0.18ohm,1%,1W,AA,TP,4.3	
R1S14	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S15	2001-000096	BY230036	R-CARBON(S);1MOHM,5%,1/2W,AA,TP,2.4X6.4M	
R1S31	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S32	2001-000221	BY230019	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1S33	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S35	2004-000500	BY230388	R-METAL;2.7Kohm,1%,1/8W,AA,TP,1.8x3.2m	
R1S37	2003-000148	BY230003	R-METAL OXIDE;100ohm,5%,2W,AE,TP,6x16mm	
R325	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R326	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R335	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R374	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R3A04	2001-000221	BY230019	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	

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R3A25	2001-000221	BY230019	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R3A50	2001-000800	70795044	R-CARBON;5.1KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R3S02	2001-000435	70795008	R-CARBON;1MOHM,5%,1/8W,AA,TP,1.8X3.2MM	D-VR30-S-TF Only
R501	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R503	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R512	2001-000660	70795032	R-CARBON;33KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R608	2001-000864	70795047	R-CARBON;56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R609	2001-000864	70795047	R-CARBON;56KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R632	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R633	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R636	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R637	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R641	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R642	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R643	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R644	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R647	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R651	2001-000010	70795052	R-CARBON;68KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R658	2001-000633	70795029	R-CARBON;30KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R660	2001-000786	70795041	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R663	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R664	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R668	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R669	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R673	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R674	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R676	2001-000633	70795029	R-CARBON;30KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R701	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R702	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
SW713	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW714	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW715	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW716	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW717	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW718	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW719	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW720	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW721	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW722	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
VA1S01	1405-001026	BY634022	VARISTOR;470V,600A,9x7mm,TP	
W002	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	
W022	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	
W074	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	
W165	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	
W237	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	
XT301	2801-001397	BY633009	CRYSTAL-UNIT;4.433619MHz,20ppm,28-AAA,S,	
XT602	2801-003139	BY633010	CRYSTAL-UNIT;8MHz,50ppm,28-AAA,22pF,80oh	
ZD1P02	0403-001211	BY430015	DIODE-ZENER;MTZJ12B,11.8-12.3V,500MW,DO-	
ZD1P03	0403-000720	BY430013	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
ZD1P04	0403-000717	BY430005	DIODE-ZENER;MTZJ5.1B,4.94-5.2V,500MW,DO-	
ZD1S01	0403-001318	BY430107	DIODE-ZENER;MTZJ4.3B,4.17-4.43V,500MW,DO	
ZD1S02	0403-000713	BY430110	DIODE-ZENER;MTZJ20B,18.63-17.7V,500MW,DO	
C1P130	2401-001992	70796291	C-AL;2200UF,20%,10V,WT,TP,10X20MM,5	
C1S01	2401-000342	BY130532	C-AL;100uF,20%,400V,WT,-,20x30,10	
C1S02	2201-000963	BY130161	C-CERAMIC,DISC;1NF,20%,400V,Y5U,TP,9.5X6	
C1S03	2201-000963	BY130161	C-CERAMIC,DISC;1NF,20%,400V,Y5U,TP,9.5X6	
C1S04	2301-001711	BY130491	C-FILM,LEAD;220nF,##20%,275V,BK,17.5*10*	
C1S05	2301-001711	BY130491	C-FILM,LEAD;220nF,##20%,275V,BK,17.5*10*	
C1S06	2201-000987	BY130164	C-CERAMIC,DISC;2.2NF,20%,400V,Y5U,BK,12.	
C1S30	2401-003390	BY130501	C-AL;2200uF,20%,16V,LZ,TP,13x31.5,5	
C1S31	2401-003390	BY130501	C-AL;2200uF,20%,16V,LZ,TP,13x31.5,5	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
C1S33	2401-000717	BY130493	C-AL;2200uF,20%,25V,WT,TP,12.5x25,5	
CN01	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
FL282	3809-001581	BY634835	FFC CABLE-FLAT;30V,80C,60mm,33P,1.25mm,U	
CN02	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
FL282	3809-001581	BY634835	FFC CABLE-FLAT;30V,80C,60mm,33P,1.25mm,U	
CN03	3711-004379	BY634830	CONNECTOR-HEADER;BOX,4P,1R,2MM,STRAIGHT,	
CN04	3711-000827	BY634827	CONNECTOR-HEADER;BOX,2P,1R,2mm,STRAIGHT,	
CN1S01	3711-000203	BY634858	CONNECTOR-HEADER;1WALL,2P,1R,7.92MM,STRA	
CN301	3708-000391	70796387	CONNECTOR-FPC/FFC/PIC;10P,1.25mm,STRAIGH	
CN303	3708-001165	BY634023	CONNECTOR-FPC/FFC/PIC;6P,1.25MM,STRAIGHT	
FL042	3809-001206	BY634415	CABLE-FLAT;30V,-20to+80C,140mm,6P,1.25mm	
CN3A02	AC37-00028A	BY634831	CONNECTOR-SOCKET;-,X-11,T9.0,W8.5,PBT NT	
CN604	AC37-00027A	BY634826	CONNECTOR-HEADER;20045WS,X-11,T8.5,W17.4	
D1S30	0404-001225	BY430112	DIODE-SCHOTTKY;SRAF560,60V,5000mA,ITO-22	
D1S31	0404-001225	BY430112	DIODE-SCHOTTKY;SRAF560,60V,5000mA,ITO-22	
D1S32	0402-001643	BY430126	DIODE-RECTIFIER;MBRF10A0,100V,10A,ITO-22	
D1S33	0402-001643	BY430126	DIODE-RECTIFIER;MBRF10A0,100V,10A,ITO-22	
DT701	AK07-00031A	BY634958	LED DISPLAY;BCD-9033A,DVD-VR320,70,10,7,	
F1S01	3601-000237	BY634950	FUSE-CARTRIDGE;250V,2A,SLOW-BLOW,CERAMIC	
GP601	AC63-00043A	BY730731	SHIELD CASE-GROUND PCB;SV-643F,STPE,T0.3	
HSD11A	AH62-30122A	BY731633	HEAT SINK-POWER;1,AL,VO,T1.3,ANODIZING,W	
IC1P01	AC14-12006N	70796345	IC-VOLT REGU;KA78R12,SIP,STICK	
IC1P02	AC14-12006N	70796345	IC-VOLT REGU;KA78R12,SIP,STICK	
IC1P03	1203-003216	BY631290	IC-POSI.FIXED REG.;G9133,TO-220F,4P,10.1	
IC1S01	1203-002805	BY631237	IC-PWM CONTROLLER;ICE2BS01,PDIP,8P,9.52X	
IC1S02	0604-001028	BY530004	PHOTO-COUPLER;TR,50-600%,250mW,DIP-4,ST	
IC605	1103-001331	BY631281	IC-EEPROM;S524A60X51,2Kx8Bit,DIP,8P,9.2x	
L1S01	AC29-30050B	BY330056	FILTER LINE NOISE;-,400uH,-,AC250V,TR12.	
L1S02	AK29-00002A	BY330083	FILTER EMI;RECORDER,SQ2222,0.42Ohm Max,1	
L1S30	AH27-00039A	BY330081	COIL CHOKE;DR CHOKE(8*6),DVD-R2000,22uH,	
L1S31	AH27-00039A	BY330081	COIL CHOKE;DR CHOKE(8*6),DVD-R2000,22uH,	
PT1SD1	AC26-00014C	BY330096	TRANS SWITCHING;EER-3534,RAM COMBO,-,FRE	
PT601	0604-001275	BY631213	PHOTO-INTERRUPTER;-,-,0MW,SNAP(STOPPER),	
PT602	0604-001275	BY631213	PHOTO-INTERRUPTER;-,-,0MW,SNAP(STOPPER),	
Q1S01	0505-001729	BY530077	FET-SILICON;SPA04N60C3,N,600V,4.5A,0.85O	
R1S02	2006-000273	70796087	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.5X18M	
R1S03	2006-000273	70796087	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.5X18M	
R1S04	2006-000262	BY230170	R-CEMENT;2.7ohm,10%,2W,CB,TP,7.5x11x20.	
RM701	AC32-00006A	BY630162	MODULE REMOCON;TSOP2238WE1,38KHZ,-,5.08m	
SMPS_C	AK63-00131A	BY731649	SHIELD-CASE SMPS;DVD-VR300,SPTE,T0.3,W15	
SW602	AC34-00006A	BY634846	SWITCH-REC;-,-,-,-,-,-,-,-,-,-,-,-,-,-,-	
SW603	AC34-00005A	BY634845	SWITCH MODE;-,-,-,-,-,-,-,-,-,-,-,-,-,-,	
SW604	3409-001165	BY634901	SWITCH-DETECTOR;5V,1mA,-,50gf,ON-OFF	
W234	0402-001533	BY430120	DIODE-RECTIFIER;1N5408,1000V,3A,-,BK	
P022	AK92-00667E	BY630498	ASSY PCB-JACK;D-VR4TB/TSB,DVD Recorder C	D-VR15-S-TB Only
	AK92-00667E	BY630498	ASSY PCB-JACK;D-VR4TB/TSB,DVD Recorder C	D-VR35-S-TB Only
	AK92-00667H	BY630505	ASSY PCB-JACK;D-VR4XTG/TSB,DVD Recorder	D-VR30-S-TG Only
	AK92-00667F	BY630499	ASSY PCB-JACK;D-VR4XTF/TSB,DVD Recorder	D-VR30-S-TF Only
	AK92-00667G	BY630500	ASSY PCB-JACK;D-VR4XTB/TSB,DVD Recorder	D-VR25-S-TB Only
AC14	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC18	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC19	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AC21	2203-000357	BY130442	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
AC22	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC23	2203-000125	BY130520	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	
AC24	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC25	2203-000357	BY130442	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
AC26	2203-000125	BY130520	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	
AC27	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	

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AC9	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
AD1	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD2	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD3	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD4	0401-000008	BY430108	DIODE-SWITCHING;DAN217,80V,100MA,SOT-23,	
AD5	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AE11	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
AE12	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
AE13	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
AE14	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
AE15	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
AE16	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
AE3	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
AE5	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
AE6	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
AE7	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
AIC4	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AIC5	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AQ1	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ2	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ3	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ4	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ5	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ6	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ7	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ8	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ9	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
AR10	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR11	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR12	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
AR13	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
AR14	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR15	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR16	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR17	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR18	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR28	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
AR29	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR30	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR31	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR32	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR33	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR35	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR36	2001-000515	70795019	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR37	2001-000273	70795007	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
AR39	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR40	2001-000515	70795019	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR41	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
AR42	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR43	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
AR44	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR45	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR46	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
AR47	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR48	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
AR49	2001-000837	70795045	R-CARBON;51KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
AR50	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
AR52	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR54	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR55	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
AZ1	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
AZ2	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ3	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ4	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ5	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ6	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ7	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ8	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
C401	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C402	2203-000604	BY130525	C-CER,CHIP;22nF,10%,25V,X7R,TP,1608	
C403	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C404	2401-001324	BY130534	C-AL;0.47UF,20%,50V,GP,BK,3X5,2.5	
C404A	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C405	2401-001573	BY130288	C-AL;47uF,20%,50V,GP,TP,6.3x11,2.5	
C406	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C407	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	Not Used D-VR30-S-TF
C410	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C4N01	2203-000140	BY130459	C-CER,CHIP;1.5nF,10%,50V,X7R,TP,1608,-	
C4N02	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C4N03	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
C4N04	2401-002569	BY130537	C-AL;2.2uF,20%,50V,GP,TP,4x5,2.5	
C4N05	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C4N06	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C4N07	2203-002041	BY130477	C-CER,CHIP;0.47nF,10%,50V,X7R,TP,1608	
C4N08	2203-000140	BY130459	C-CER,CHIP;1.5nF,10%,50V,X7R,TP,1608,-	
C4N09	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C4N10	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C4N11	2401-002186	BY130536	C-AL;3.3uF,20%,50V,GP,BK,4x5,2.5	
C4N12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C4N13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C4N14	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C4N15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C4N16	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
C4N17	2203-002041	BY130477	C-CER,CHIP;0.47nF,10%,50V,X7R,TP,1608	
C4N18	2203-002041	BY130477	C-CER,CHIP;0.47nF,10%,50V,X7R,TP,1608	
C4N19	2202-000279	70693047	C-CERAMIC,MLC-AXIAL;47pF,5%,50V,SL,TP,3.	
C4N21	2203-000160	BY130524	C-CER,CHIP;0.0015NF,0.25PF,50V,C0G,TP,16	
C4N22	2203-000160	BY130524	C-CER,CHIP;0.0015NF,0.25PF,50V,C0G,TP,16	
C4N23	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C4N24	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C4N25	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C4N30	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C6P01	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C6P04	2203-000681	BY130445	C-CER,CHIP;0.027NF,5%,50V,C0G,TP,1608	
C6P05	2203-000681	BY130445	C-CER,CHIP;0.027NF,5%,50V,C0G,TP,1608	
C6P06	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C6P07	2401-003336	BY130545	C-AL;4.7UF,20%,50V,GP,TP,5X5,2	
C6P08	2203-001071	BY130465	C-CER,CHIP;0.056NF,5%,50V,C0G,TP,1608	
C6P10	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C6P11	2401-000588	BY130533	C-AL;1uF,20%,50V,GP,TP,3x5,2.5	
C6P12	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C6P13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C6P15	2203-001140	BY130526	C-CER,CHIP;68nF,10%,16V,X7R,TP,1608	
C701	2301-001679	BY130530	C-FILM,PEF;2.2nF,5%,50V,TP,5.8x3x7mm,-	
C702	2301-001679	BY130530	C-FILM,PEF;2.2nF,5%,50V,TP,5.8x3x7mm,-	
C703	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C704	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C800	2203-005918	BY130489	C-CER,CHIP;1000NF,10%,6.3V,X7R,TP,1608	
C801	2401-001543	BY130543	C-AL;47uF,20%,25V,GP,TP,6.3x5mm,2.5	
C802	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C803	2401-001543	BY130543	C-AL;47uF,20%,25V,GP,TP,6.3x5mm,2.5	
C805	2203-005918	BY130489	C-CER,CHIP;1000NF,10%,6.3V,X7R,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
C805B	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C806	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C806B	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C807	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C808	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C810	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C813	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C817	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C818	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
C819	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
C819B	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C820	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
C820B	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C821	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
C822	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
C824	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C824B	2203-001697	BY130487	C-CER,CHIP;0.082nF,5%,50V,NP0,1608	
C825	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
C825A	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C825B	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C826	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C826A	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
C826B	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C827	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
C828A	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
C829	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
C830	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
C831	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C832	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C833	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
C833A	2203-000998	BY130446	C-CER,CHIP;0.047NF,5%,50V,C0G,TP,1608	
C835	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
C835A	2401-003336	BY130545	C-AL;4.7UF,20%,50V,GP,TP,5X5,2	
C835J	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
C836	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C836A	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C836J	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C837	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C838	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C839	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C841	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C842	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C843	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C844	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C845	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C846	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C847	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C848	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C853	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
C854	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
C891A	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	Not Used D-VR30-S-TF
C891B	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	Not Used D-VR30-S-TF
C901	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
C902	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
CE76	2401-003480	BY130339	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	
CN3	3711-005612	BY634828	CONNECTOR-HEADER;BOX,30P,2R,2mm,STRAIGHT	
CN4	3711-005612	BY634828	CONNECTOR-HEADER;BOX,30P,2R,2mm,STRAIGHT	
CN5	AC37-00027A	BY634826	CONNECTOR-HEADER;20045WS,X-11,T8.5,W17.4	
CN7	3722-002118	BY634839	JACK-IEEE1394;4P,NI,BLK,ANGLE,IEEE1394	Not Used D-VR30-S-TF
CNC1	2203-001697	BY130487	C-CER,CHIP;0.082nF,5%,50V,NP0,1608	
CNR37	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
CNR37A	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR38	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CS01	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
CS02	2401-001502	BY130535	C-AL;47uF,20%,16V,GP,TP,6.3x5,2.5	
CS04	2401-000408	BY130395	C-AL;10uF,20%,16V,GP,TP,3.5x5,2.5	
D1P105	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P110	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D4N01	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D4N02	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D501	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
D6P01	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
D801	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D805	0401-000101	70795150	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
DOC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DOL1	2901-001273	BY330077	FILTER-EMI SMD;50V,2A,-,220pF,3.2x1.6x0.	
DOL3	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,-,TP,-,-,	
DOL4	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DOR1	2001-000515	70795019	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
DOR2	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
DOR3	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
DOR4	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
DOZ1	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
DOZ2	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
DVR1	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	Not Used D-VR15-S-TB, D-VR35-S-TB
DVR2	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	Not Used D-VR15-S-TB, D-VR35-S-TB
DVR3	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	Not Used D-VR15-S-TB, D-VR35-S-TB
DVR4	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	Not Used D-VR15-S-TB, D-VR35-S-TB
FVR6	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
FVR7	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
FZD1	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
FZD2	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
FZD3	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
FZD4	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
FZD5	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
IC4N01	1204-001765	BY631149	IC-AUDIO PROCESSOR;MSP3417D(PQFP),PQFP,4	
IC6P01	1204-001794	BY631157	IC-AUDIO PROCESSOR;LC74775NM-9808,MPF,30	
IC801	1001-001177	BY631316	IC-VIDEO SWITCH;TEA6425D,VIDEO SWITCH ,S	
IC802	1204-002418	BY631321	IC-CHANNEL SELECTOR;SPACE	
J881	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
JACK1	3722-002314	BY634956	JACK-PIN;6P,SN/NI,WH/RD/BL,YE/WH/RD,ANG	
JACK2	3722-002022	BY634955	JACK-PIN;3P,NI,GRN/BLU/RED,ANGLE	
JACK3	3722-002106	BY634840	JACK-PIN;3P+1P,SN/NI,BLK,ANGLE	
L401	AC27-12001N	70796213	COIL CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	
L4N01	2701-000188	70796075	INDUCTOR-AXIAL;4.7uH,5%,2434	
L4N02	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L4N03	2701-000188	70796075	INDUCTOR-AXIAL;4.7uH,5%,2434	
L4N04	2701-000119	70796361	INDUCTOR-AXIAL;120uH,5%,2434	
L6P01	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L6P03	2701-000160	70795162	INDUCTOR-AXIAL;22uH,5%,2434	
L6P05	2701-000165	BY330052	INDUCTOR-AXIAL;27uH,5%,2434	
L701	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L702	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L801	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L802	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L803	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L804	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L805	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L806	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L809	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L810	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L811	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
L812	2701-000181	BY330053	INDUCTOR-AXIAL;33uH,5%,2434	
L814	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
LS01	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
MCON1	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
MCON2	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
PC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PE3	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
PE4	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE5	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE6	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE7	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
PL3	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
PL6	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
Q401	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
Q6P02	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
Q6P04	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
Q802	0504-000129	70795815	TR-DIGITAL;KSR1104,NPN,200mW,47K/47K,SOT	
Q803	0504-000129	70795815	TR-DIGITAL;KSR1104,NPN,200mW,47K/47K,SOT	
Q804	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
Q806	0504-000152	BY530078	TR-DIGITAL;KSR2101,PNP,200mW,4.7K/4.7K,S	
Q809	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
Q810	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
Q810J	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
Q891A	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	Not Used D-VR30-S-TF
Q891B	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	Not Used D-VR30-S-TF
QS01	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
QS02	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
QS03	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
R201	2001-000977	70795058	R-CARBON;8.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R202	2001-000977	70795058	R-CARBON;8.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R301	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R302	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R401	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R401A	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R402	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R402A	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R403	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R404	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R406	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R408	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	Not Used D-VR30-S-TF
R440	2001-000362	70796067	R-CARBON;150OHM,5%,1/8W,AA,TP,1.8X3.2MM	Not Used D-VR30-S-TF
R441	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	Not Used D-VR30-S-TF
R4N01	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R4N02	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R4N03	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R4N04	2007-000129	BY230307	R-CHIP;27Kohm,5%,1/10W,TP,1608	
R4N05	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R4N06	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R6P01	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R6P02	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R6P03	2007-000081	BY230281	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	
R6P04	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R6P05	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R6P06	2007-000086	BY230283	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
R6P08	2007-000118	BY230293	R-CHIP;390ohm,5%,1/10W,TP,1608	
R6P12	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R6P13	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
R6P14	2007-000123	BY230306	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	
R801	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R801A	2007-000116	BY230349	R-CHIP;120ohm,5%,1/10W,TP,1608	
R802A	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R802B	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R803	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
R805	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R805B	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	D-VR30-S-TG, D-VR30-S-TF Only
R805G	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	D-VR30-S-TG, D-VR30-S-TF Only
R805R	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	D-VR30-S-TG, D-VR30-S-TF Only
R806	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R807	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R807A	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R807J	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R808	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R808A	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R809	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R810	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R811	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R812	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R813	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R813A	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
R814	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R814B	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
R815	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R816	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R817	2001-000405	70795607	R-CARBON;180OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R818	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R818A	2007-000450	BY230299	R-CHIP;180ohm,5%,1/10W,TP,1608	
R819	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R819A	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R820	2007-000643	BY230325	R-CHIP;270ohm,5%,1/10W,TP,1608	
R821	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R821A	2001-000660	70795032	R-CARBON;33KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R822	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R822A	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R822B	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R830	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R831	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R832	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
R833	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
R839	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R841	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
R842	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R842J	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R843	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R843A	2007-000965	BY230303	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	
R844	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R845	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R846	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R847	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R853	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R854	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R855	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R856	2007-000965	BY230303	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	
R891A	2007-000100	70795719	R-CHIP;68Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R891B	2007-000100	70795719	R-CHIP;68Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R892A	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R892B	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R893A	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R893B	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF

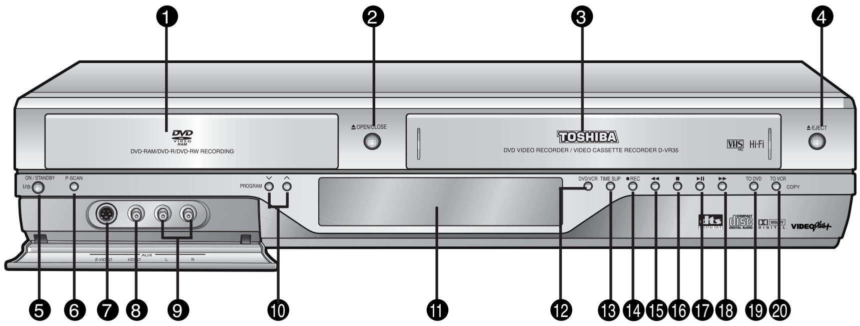
Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
R894A	2007-000129	BY230307	R-CHIP;27Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R894B	2007-000129	BY230307	R-CHIP;27Kohm,5%,1/10W,TP,1608	Not Used D-VR30-S-TF
R900	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R901	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
RS01	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
RS02	2007-000125	BY230296	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	
RS03	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
RS04	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
RS05	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
RS06	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
RS07	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
RS08	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
RS09	2007-000125	BY230296	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	
RS10	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
SCART	3722-001372	BY634954	JACK-SCART;42P/2R,-,SN,BLK,-	
SJACK	3722-001375	BY634838	JACK-DIN;4P,-,NI,BLK,-	
SVSEL1	1204-001748	BY631283	IC-SELECTOR;MM1503XN,SOP,6P,63MIL,PLASTI	
SW709	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW710	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW711	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW712	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW713A	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
TM401	AC40-00029A	BY633021	TM BLOCK;TCMK0601PD20A,PAL B/G + I + D/	Otber Only
	AC40-00038A	BY630493	TM BLOCK-SECAM-L/L’,PAL-B/G;TCPL0601PD20	D-VR30-S-TF Only
VC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC13	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
VC14	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
VC15	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
VC16	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
VC17	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
VC18	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
VC19	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
VC50	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC9	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VDR1	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR2	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR3	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR4	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR5	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR6	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VE1	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
VE2	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
VE4	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE5	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE6	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VE7	2401-001479	BY130015	C-AL;470uF,20%,10V,GP,TP,6.3*11mm,5	
VIC1	1204-001978	BY631245	IC-VIDEO PROCESS;LA73054,-,36P,-,SSOP,7V	
VIC2	1204-001748	BY631283	IC-SELECTOR;MM1503XN,SOP,6P,63MIL,PLASTI	
VL1	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
VL2	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
VL3	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
VL6	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
VQ1	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
VR10	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
VR11	2001-000969	70795054	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR12	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
VR13	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR14	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR30	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR31	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR33	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR34	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR49	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
VR51	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR53	2001-000969	70795054	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR54	2001-000969	70795054	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VR55	2001-000969	70795054	R-CARBON;75OHM,5%,1/8W,AA,TP,1.8X3.2MM	
VSEL1	1204-001748	BY631283	IC-SELECTOR;MM1503XN,SOP,6P,63MIL,PLASTI	
VZ1	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ10	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ11	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ12	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ2	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ3	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ4	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ5	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ6	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ7	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ8	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ9	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
W205	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
W206	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
XT4N01	2801-004096	BY631285	CRYSTAL-UNIT;18.432MHZ,20PPM,28-AAA,16PF	
ZD401	0403-000390	70795272	DIODE-ZENER;UZP33B,31.4-34.6V,1000MW,DO-	
ZD801	0403-000297	BY430024	DIODE-ZENER;MTZ6.2B,5.96-6.27V,500mW,DO-	
ZD805	0403-001211	BY430015	DIODE-ZENER;MTZJ12B,11.8-12.3V,500MW,DO-	
ZD807	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZD809	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZD811	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZD851	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZD852	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZD853	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZD854	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZD863	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZDS806	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
ZDS810	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	

13. Operating Instructions

Description

Front Panel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DVD VIDEO RAM
DVD-RAM/DVD-R/DVD-RW RECORDING
⏏ OPEN/CLOSE
TOSHIBA
DVD VIDEO RECORDER / VIDEO CASSETTE RECORDER D-VR35
VHS PAL
Hi-Fi
⏏ EJECT
ON / STANDBY
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P-SCAN
PROGRAM
DVD/VCR
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DOLBY DIGITAL
VIDEO Plus+
AUX
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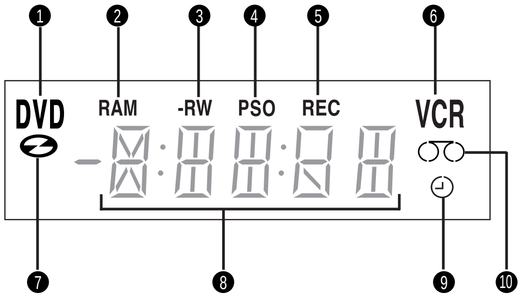
1. DVD DECK	11. FRONT PANEL DISPLAY
2. DVD OPEN/CLOSE BUTTON	12. DVD/VCR SELECT BUTTON
3. VCR DECK	13. TIME SLIP BUTTON
4. VCR EJECT BUTTON	14. RECORD BUTTON
5. ON/STANDBY BUTTON	15. REW(VCR)/SKIP BUTTON (DVD)
6. P-SCAN BUTTON	16. STOP BUTTON
7. S-VIDEO INPUT JACK	17. PLAY/STILL BUTTON
8. VIDEO INPUT JACK	18. F.F(VCR)/SKIP BUTTON (DVD)
9. AUDIO L.R INPUT JACK	19. TO DVD COPY BUTTON
10. PROGRAM ∧ / ∨ BUTTON	20. TO VCR COPY BUTTON

Front Panel Display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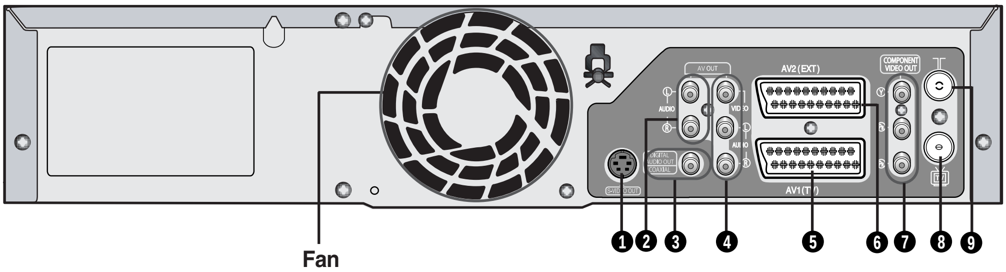
❺
❻
DVD
RAM
-RW
PSO
REC
VCR
-8:88:88
❼
❽
❾
❿

1. DVD is activated.	7. DVD or CD media is loaded.
2. DVD-RAM is activated.	8. The time, counter position or current deck status is indicated.
3. DVD-R or DVD-RW is activated.	9. When you set a Timer recording, this indicator will light up.
4. Progressive Scan mode is activated.	10. VHS Videotape is loaded.
5. Record function is activated.	
6. VCR is activated.	

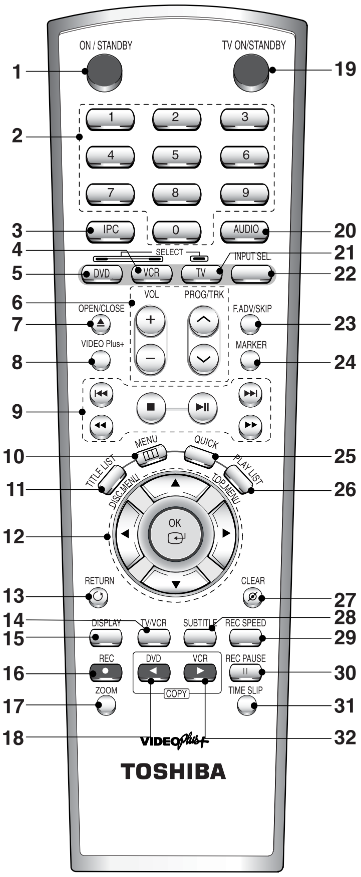
Rear Panel


AV OUT
AV2 (EXT)
COMPONENT VIDEO OUT
AUDIO
VIDEO
AUDIO
AV1(TV)
1
2
3
4
5
6
7
8
9

Fan
The fan always revolves when the power is on.
Ensure a minimum of 4” clear space on all sides of the fan when installing the product.

1. S-VIDEO OUT JACK
2. AUDIO L, R OUT JACKS
3. DIGITAL AUDIO OUT JACK (COAXIAL)
4. AUDIO/VIDEO JACK(AV OUT)
5. AV1(TV) IN/OUT SCART
6. AV2(EXT) SCART
7. COMPONENT VIDEO OUT JACKS
8. OUT TO TV CONNECTOR
9. AERIAL IN CONNECTOR

Tour of the Remote Control


ON / STANDBY
TV ON/STANDBY
1
2
3
4
5
6
7
8
9
IPC
0
AUDIO
SELECT
DVD
VCR
TV
INPUT SEL
VOL
PROG/TRK
OPEN/CLOSE
F.ADV/SKIP
VIDEO Plus+
MARKER
MENU
QUICK
TITLE LIST
DISC MENU
PLAY LIST
TOP MENU
OK
RETURN
CLEAR
DISPLAY
TV/VCR
SUBTITLE
REC SPEED
REC
DVD
VCR
REC PAUSE
ZOOM
COPY
TIME SLIP
VIDEO Plus+
TOSHIBA
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

1. ON/STANDBY Button

2. NUMBER Button

3. IPC Button

4. VCR Button
Press this when you use a VCR.

5. DVD Button
Press this when you use a DVD.

6. TV Control Buttons
- VOLUME Button
  TV volume adjustment
- PROG Button
  Press this to select a TV programme.
- TRK Button
  Press this to remove the white line.

7. OPEN/CLOSE Button
To open and close the disc tray.

8. VIDEO Plus+ Button
Press this when you use video plus+.

9. Playback-related Buttons
Forward/Rewind, Search, Skip, Stop, Play/Still

10. MENU Button
Brings up the DVD Recorder & VCR's setup menu.

11. TITLE LIST/DISC MENU Button
Press this to enter the TITLE list/Disc menu.

12. OK/DIRECTION Buttons (▲/▼, ◀/▶)

13. RETURN Button
Returns to previous menu.

14. TV/VCR Button

15. DISPLAY Button
This will display current setting or disc status.

16. REC Button
Press this to make a recording on DVD-RAM/-RW/-R discs and VHS Video tape.

17. ZOOM Button
Zooms in on screen.

18. TO DVD copy Button
Press this when you copy from the VCR to the DVD.

19. TV ON/STANDBY Button

20. AUDIO Button
Press this to access various audio functions.

21. TV Button
Press this to operate TV.

22. INPUT SEL Button
Select input signal in external input mode (Tuner or AV1, AV2 or AUX input).

23. F.ADV/SKIP Button

24. MARKER Button
Press this to bookmark or mark a position while playing a disc.

25. QUICK Button
Press this to view the status of the disc that is being played.

26. PLAY LIST/TOP MENU Button
Use this to return to the TOP MENU, or to view the recorded files list.

27. CLEAR Button

28. SUBTITLE Button
Press this to switch the DVD's subtitle language.

29. REC SPEED Button
Press this to set the desired recording time and picture quality.

30. REC PAUSE Button
Press this to pause during recording.

31. TIME SLIP Button

32. TO VCR copy Button
Press this when you copy from the DVD to the VCR.

Connecting & Setting Up

- *Quick Overview 17*
- *Connecting DVD Recorder & VCR to the TV using the RF Cable 18*
- *Connecting the SCART Cable 18*
- *Connecting the Audio/Video Cable 20*
- *Connecting the S-Video Cable 20*
- *Connecting the Component Video Cable .21*
- *AV Receiver Connections 22*
- ***Connecting an external devices to the** AUX jacks 22*

Quick Overview

A Quick overview presented in this guide will give you enough information to start using the DVD Recorder & VCR.

Connecting DVD Recorder & VCR to the TV using the RF Cable

Connecting the SCART Cable

Connecting the Audio/Video Cable

Connecting the S-Video Cable

Connecting the Component Video Cable

AV Receiver Connections

Connecting an external devices to the AUX jacks

Connecting DVD Recorder & VCR to the TV using the RF Cable

Note

- Make sure that both the television and the DVD Recorder & VCR are switched off before connecting the cables.

1 Remove the aerial or network input cable from the television.

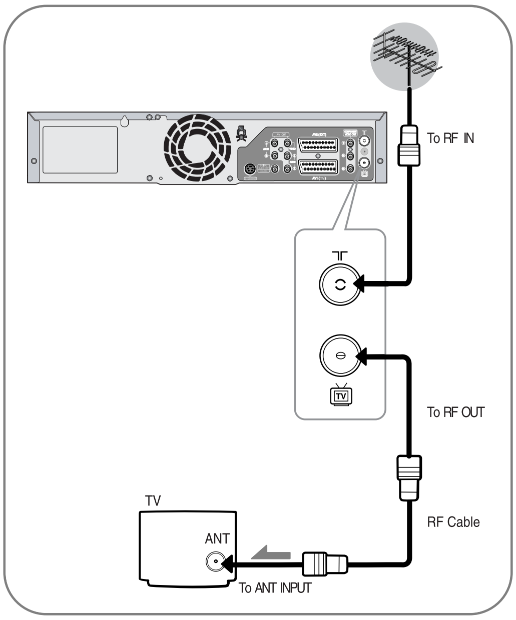
2 Connect this cable to the 75Ω aerial jack marked ┐┌ on the rear of your DVD Recorder & VCR.

3 Plug the RF Cable supplied into the TV jack on your DVD Recorder & VCR.

4 Plug the other end of the RF Cable into the connector previously used for the aerial on the television.

Note

- To obtain better quality pictures and sound on your television, you can also connect your DVD Recorder & VCR to the television via the SCART cable if your television equipped with a scart type of connection.



Connecting the SCART Cable

Case 1 : Connecting DVD Recorder & VCR to the TV using the SCART Cable

You can connect your DVD Recorder & VCR to the television using the SCART cable if the appropriate input is available on the television. You thus:

- Obtain better quality sound and pictures
- Simplify the setting up procedure of your DVD Recorder & VCR

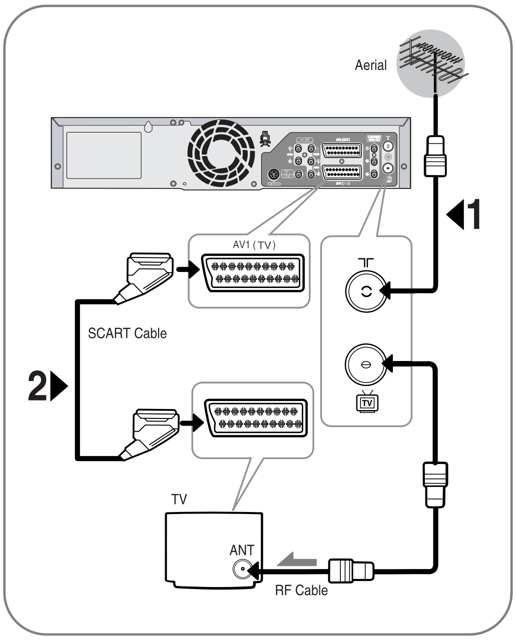
Note

- Regardless of the type of connection chosen, you must always connect the RF Cable. Otherwise, no picture will be visible on the screen when the DVD Recorder & VCR is switched off.
- Make sure that both the television and the DVD Recorder & VCR are switched off before connecting the cables.

1 Connect the Aerial Cable.

2 Connect one end of the SCART cable to the AV1 (TV) jack on the rear of the DVD Recorder & VCR.

3 Plug the other end into the appropriate connector on the television.



Case 2 : Connecting DVD Recorder & VCR to a Satellite Receiver or Other Equipment

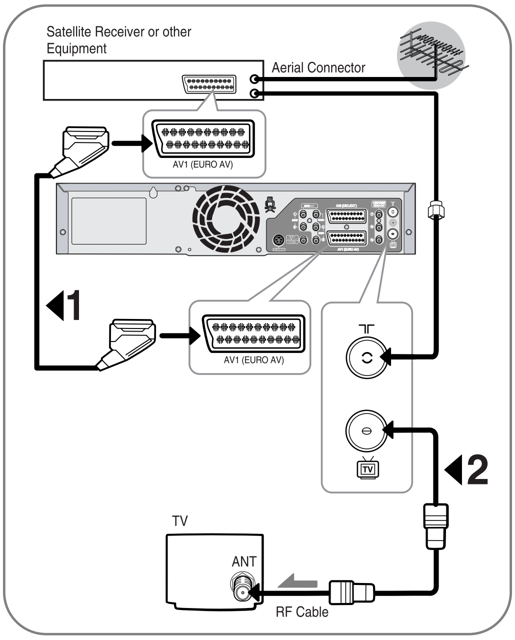
You can connect your DVD Recorder & VCR to a Satellite receiver or other DVD Recorder & VCR using the SCART cable if the appropriate outputs are available on the equipment chosen.
The following illustrations give a few examples of the connection possibilities.

1 AV1 (TV): By means of 21-pin Scart Cable

Plug the SCART Cable with satellite receiver or other equipment into the AV1 (TV) jack on the rear of the DVD Recorder & VCR.
After making this connection, select the source by pressing the **INPUT SEL.** button for the **AV1** input sources.

2 By means of RF Cable

After making this connection, you must preset the station received through the satellite tuner.
RF output channel of the satellite receiver should be adjusted away from channel 60, which is used by the DVD Recorder & VCR, e.g. re-adjust to channel 59.


Satellite Receiver or other Equipment
Aerial Connector
AV1 (EURO AV)
1
AV1 (EURO AV)
TV
2
TV
ANT
RF Cable

1 AV2 IN (EXT): By means of 21-pin Scart Cable

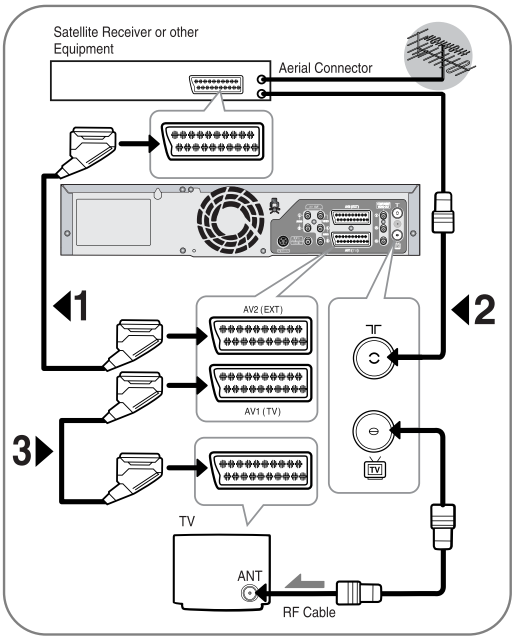
Plug the SCART Cable with satellite receiver or other equipment into the AV2 (EXT) jack on the rear of the DVD Recorder & VCR.
After making this connection, select the source by pressing the **INPUT SEL.** button for the **AV2** input sources.

2 By means of RF Cable

After making this connection, you must preset the station received through the satellite tuner.
RF output channel of the satellite receiver should be adjusted away from channel 60, which is used by the DVD Recorder & VCR, e.g. re-adjust to channel 57.

3 AV1(TV) : By means of 21-pin Scart Cable

Connect the end of the SCART cable to the AV1(TV) jack on the rear of the DVD Recorder & VCR. Plug the other end into the appropriate connector on the television.


Satellite Receiver or other Equipment
Aerial Connector
1
AV2 (EXT)
2
AV1 (TV)
3
TV
TV
ANT
RF Cable

Connecting the Audio/Video Cable

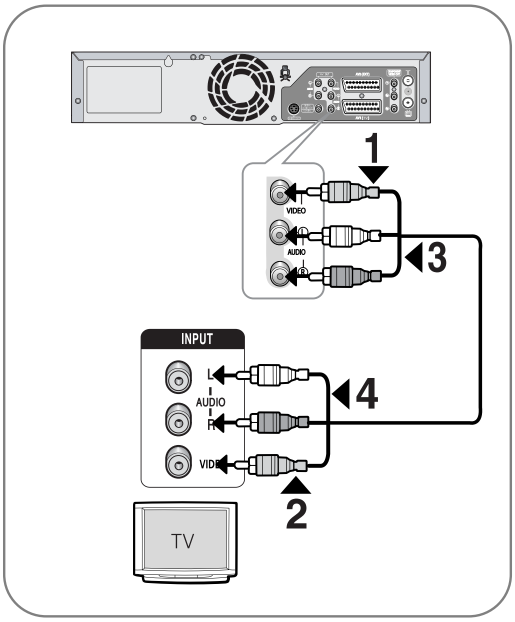
You can connect your DVD Recorder & VCR to the television using the audio/video cable if the appropriate input is available on the television.

1 Connect one end of the video cable into the **VIDEO** output jack on the rear of the DVD Recorder & VCR.

2 Plug the other end of the video cable into the appropriate input connector on the television.

3 Connect one end of the audio cables supplied into the **AUDIO** output jacks on the rear of the DVD Recorder & VCR.
- Take care to respect the colour coding of the left and right channels.

4 Plug the other end of the audio cables into the appropriate input connectors on the television.



Connecting the S-Video Cable

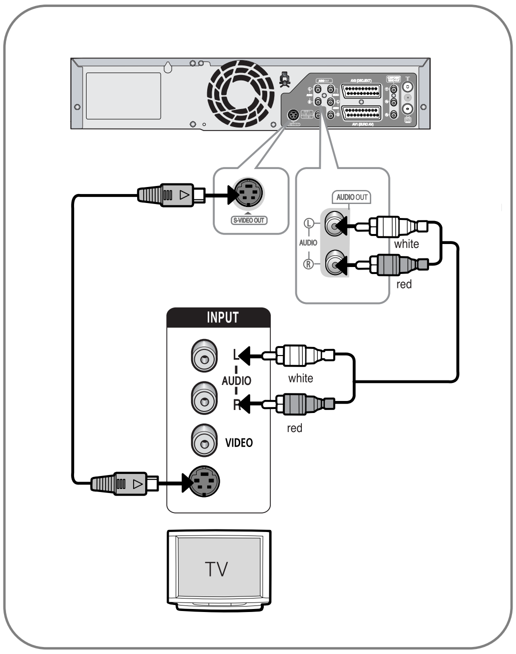
You will enjoy high quality images. S-Video seperates the picture element into black and white(Y) and colour(C) signals to present clearer images than composite video output mode.

1 Connect one end of the S-Video cable into the **S-VIDEO** output jack on the rear of the DVD Recorder & VCR.

2 Plug the other end of the S-Video cable into the appropriate input connector on the television.

3 Connect one end of the audio cable supplied into the **AUDIO** output jacks on the rear of the DVD Recorder & VCR.
- Take care to respect the colour coding of the left and right channels.

4 Plug the other end of the audio cables into the appropriate input connectors on the television.

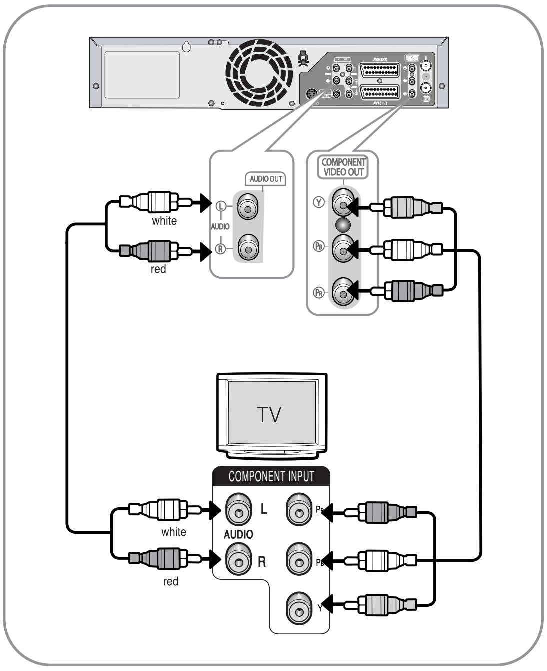


Connecting the Component Video Cable

You will enjoy high quality accurate colour reproduction images. Component video seperates the picture element into black and white(Y), blue(P_B), red(P_R) signals to present most clear and clean images.

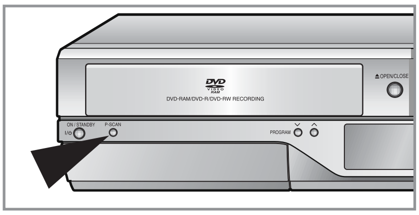
1. Connect Component video cables between the **COMPONENT VIDEO OUT** jacks on the rear of the DVD Recorder & VCR and **COMPONENT VIDEO IN** jacks on the rear of the TV.

2. Connect audio cables between the audio output jacks on the rear of the DVD Recorder & VCR and **AUDIO IN** jacks on the rear of the TV.
   - Take care to respect the colour coding of the up and down channels.



Progressive Scan

Your TV must support PAL progressive scan input to allow to watch progressive scan component video out. (See page 39)



- For more information about Progressive setting, refer to the page 39~40.
- Make sure that the colour coded connections match. That is, the Y, P_B and P_R component output jacks of your DVD Recorder & VCR should be connected to the exact corresponding component input jacks on your TV. Otherwise, red or blue images will be displayed on the TV screen.
- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In case of progressive scan picture problems, it is recommended that you switch the connection to the standard definition output. If there are questions regarding your Toshiba TV set's compatibility with this DVD Recorder & VCR, please contact our customer service centre.

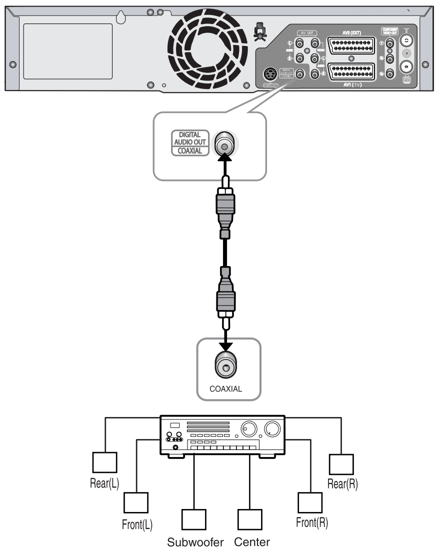
Note

- See your TV User's Manual to find out if your TV supports Progressive Scan. If Progressive Scan is supported, follow the TV User's instructions regarding Progressive Scan settings in the TV's menu system.
- Depending on your TV, the method of connection may differ from the illustration above.
- What is "Progressive Scan"? Progressive scan has twice as many scanning lines as the interlace output method has. Progressive scanning method can provide better and clearer picture quality.
- You must connect the DVD Recorder & VCR to the component(s) before using the Progressive Scan feature.

AV Receiver Connections

To take full advantage of the movie theatre experience that DVD offers, you may want to connect your DVD Recorder & VCR to a complete Surround Sound system, including an A/V Receiver and six Surround Sound speakers.
If your A/V receiver is equipped with a Dolby Digital Decoder, you have the option to bypass the DVD Recorder & VCR's built-in Dolby Digital Decoder.
Use the Digital Audio Out connection below.
To enjoy Dolby digital or DTS sound, you must set up the audio settings (see page 31).

1 Connect a Digital Audio coaxial cable from the Digital Audio Out jacks on the rear panel of the DVD Recorder & VCR to their corresponding Digital Audio Input jack on your A/V Receiver:



To Digital Audio Input of an A/V Receiver with a Dolby, MPEG2 or DTS Digital Decoder

Connecting an external devices to the AUX jacks

You can connect other audio/video equipment to your DVD Recorder & VCR using audio/video cables if the appropriate outputs are available on the equipment chosen.

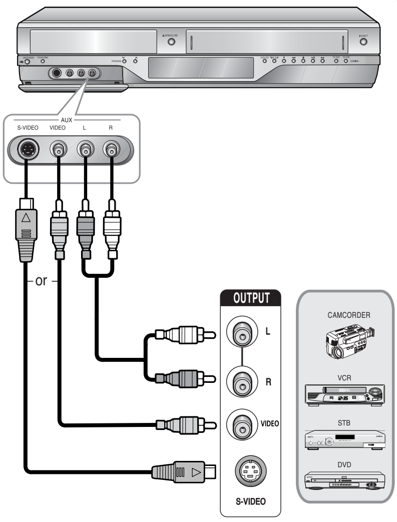
- You wish to copy a video cassette with the help of a second VCR.
- You wish to play back and/or copy pictures taken with a camcorder.
- Make sure that both the external devices and the DVD Recorder & VCR are switched off before connecting the cables.

1 Connect one end of the video cable into the **VIDEO** input jack on the front of the DVD Recorder & VCR.

2 Plug the other end of the video cable into the appropriate output connector on the other system (VCR or Camcorder, etc).

3 Connect one end of the audio cable supplied into the **AUDIO** input jacks on the front of the DVD Recorder & VCR.
- Take care to respect the colour coding of the up and down channels.

4 Plug the other end of the audio cable into the appropriate output connectors on the other system (VCR or Camcorder, etc).

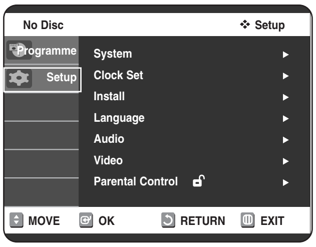


System Setup

- *On-Screen Menu Navigation 23*
- *Plug & Auto Setup 24*
- *Setting the Date and Time 25*
- *Auto Setup 26*
- *Manual Setup 27*
- *Clearing a Preset Station 28*
- *Changing the Preset Manual Setup Table . . .29*
- *VIDEO Output CH 30*
- *Setting Up the Language Options 30*
- *Setting Up the Audio Options 31*
- *Setting Up the Display(Video) Options 32*
- *Setting Up the Parental Control 33*
- *VCR Setting 34*
- *DVD EP Mode Time 36*
- *Automatic Chapter Creator 36*
- *Front Display 37*
- *NICAM 38*
- *Video Output 38*
- *Setting up the Progressive scan 39*
- *Canceling the Progressive scan 40*

On-Screen Menu Navigation

The on-screen menus allow you to enable or disable various functions on your DVD Recorder & VCR. Use the following buttons to open and navigate through the on-screen menus.



1 **MENU Button**
Press this button on the remote control to open the on-screen MENU.
Press again to exit the on-screen MENU.

2 **▲/▼,◄ /► Buttons**
Press these buttons on the remote control to move the selection bar ▲/▼,◄ /► to cycle through the menu options.

3 **OK Button**
Press this button on the remote control to confirm any new settings.

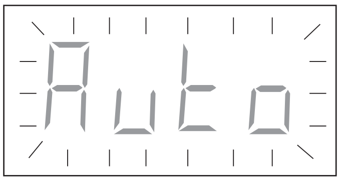
4 **RETURN Button**
Press this button on the remote control to return to the previous MENU screen displayed or to exit the on-screen MENU.

Plug & Auto Setup

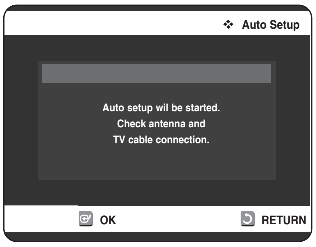
The DVD Recorder & VCR will automatically set itself up when it is plugged into the mains for the first time. TV stations will be stored in memory. The process takes a few minutes. The DVD Recorder & VCR will then be ready for use.

1 Connect the RF cable as indicated on page 18.
- Connecting Your DVD Recorder & VCR to the TV using the RF Cable.

2 Plug the DVD Recorder & VCR into the mains.
- “Auto” in the front panel display flickers.

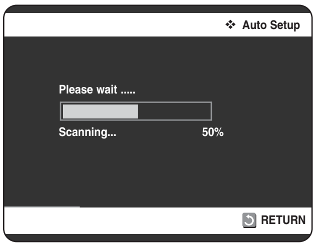


3 Start the auto setup.



Auto setup wil be started.
Check antenna and
TV cable connection.

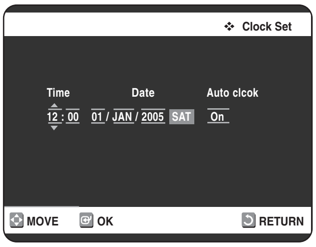
4 Start the auto scanning.



Please wait .....

Scanning... 50%

5 When the auto scanning is complete, the current time and date will be displayed automatically.



Time 12 : 00
Date 01 / JAN / 2005 SAT
Auto clcok On

6 Check the date and time.
- if it is: Correct
  Press **OK** button then the data and time will be saved.
- if it is: Incorrect
  Refer to “Setting the Date and Time” (see page 25) menu, when you want to change the date and time.

Auto Setup

Note

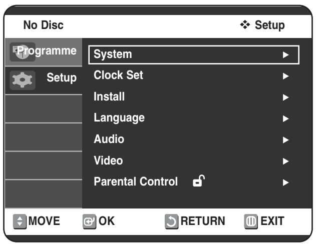
- If your clock is set to the wrong time zone or daylight saving, you can adjust these settings without turning off the Auto Clock Set function.

You do not need to preset the stations if you have already set them automatically (see Plug & Auto Setup on page 24).
Your DVD Recorder & VCR contains a built-in tuner used to receive television broadcasts.
You must preset the stations received through the tuner.
This can be done:

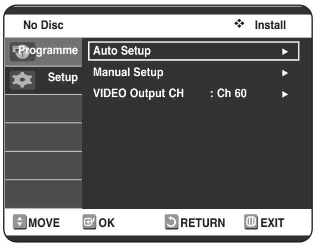
- Plug & Auto Setup (see page 24)
- Auto Setup
- Manual Setup (see page 27~28)

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.

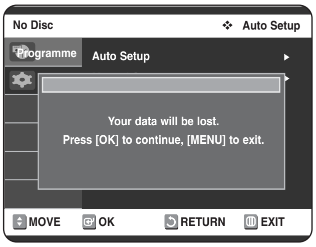

No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Install**, then press the **OK** or ▶ button.


No Disc
Install
Programme
Setup
Auto Setup
Manual Setup
MOVE
OK
RETURN
EXIT

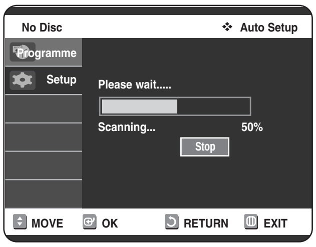
VIDEO Output CH : Ch 60

4 Press the ▲▼ buttons to select **Auto Setup**, then press the **OK** or ▶ button.
The message “Your data will be lost. Press [OK] to continue, [MENU] to exit.” is displayed.


No Disc
Auto Setup
Programme
Auto Setup
MOVE
OK
RETURN
EXIT

Your data will be lost.
Press [OK] to continue, [MENU] to exit.

5 Press the **OK** button to start the auto scanning.


No Disc
Auto Setup
Programme
Setup
Stop
MOVE
OK
RETURN
EXIT

Please wait.....
Scanning... 50%

- The first frequency band is scanned and the first station found is displayed and stored.
  And the DVD Recorder & VCR searches for the second station and so on.
- When the automatic scanning procedure has finished, the DVD Recorder & VCR switches automatically to programme 1.
- The number of stations automatically stored by the DVD Recorder & VCR depends on the number of stations that it has found.

6 If you wish to cancel the auto scanning before the end, press the **OK** button.

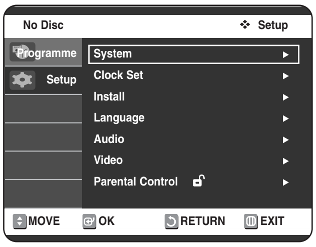
- The time and date are set automatically from the broadcast signal. If the signal is weak or ghosting occurs, the time and date may not be set automatically.
- Once the auto scanning procedure has finished, some stations may have been stored more than once; select the stations with the best reception and delete the ones no longer required.

Manual Setup

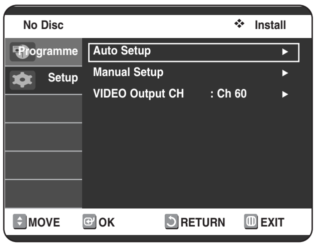
If you have already set them automatically, you do not need to preset the stations manually.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.

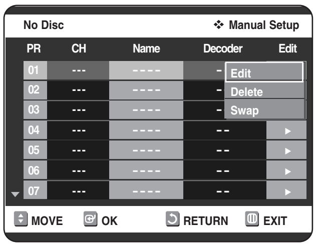

No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Install**, then press the **OK** or ▶ button.

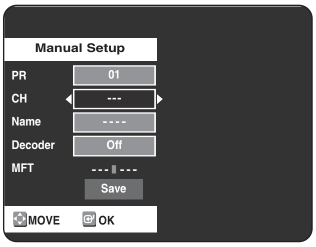

No Disc
Install
Programme
Setup
Auto Setup
Manual Setup
VIDEO Output CH
: Ch 60
MOVE
OK
RETURN
EXIT

4 Press the ▲▼ buttons to select **Manual Setup**, then press the **OK** or ▶ button.

5 Press the ▲▼ buttons to select the desired PR number, then press the **OK** or ▶ button.


No Disc
Manual Setup
PR
CH
Name
Decoder
Edit
01
02
03
04
05
06
07
Edit
Delete
Swap
MOVE
OK
RETURN
EXIT

6 Press the ▲▼ buttons to select **Edit**, then press the **OK** or ▶ button. **Manual Setup** menu is displayed.


Manual Setup
PR
01
CH

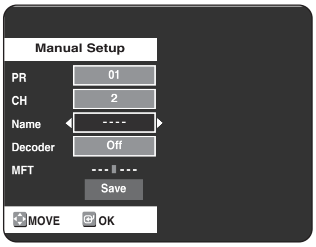
Name

Decoder
Off
MFT
Save
MOVE
OK

7 Press the ◀ ▶ buttons to start scanning the channels. The frequency band is scanned and the first station found is displayed.

8 Press the ▲▼ buttons to select **Name**. The station name is set automatically from the broadcast signal.

9 To change the programme's name, press the ▶ button.


Manual Setup
PR
01
CH
2
Name

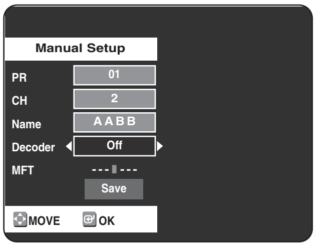
Decoder
Off
MFT
Save
MOVE
OK

10

To...	Then....
Select a Character	Press the ▲▼ buttons until the required name character is displayed (letters, numbers or " - " character)
Move to the next or previous character	Press the ◀ ▶ buttons respectively.

Press the **OK** button to save the name.

11 Press the ▲▼ buttons to select **Decoder**.
Press the ◀ ▶ buttons to select **On** or **Off**.
Indicate whether you wish to use a decoder On or Off.



Manual Setup

PR: 01
CH: 2
Name: AABB
Decoder: Off
MFT: ---▮---
Save

12

If you..	Then....
Wish to store the station displayed	• Press the ▲▼ buttons to select MFT . • Press the ◀ ▶ buttons to adjust the picture, if necessary. • Select Save to store the station.
Do not wish to store the station displayed	• Press the ▲▼ buttons to select CH. • Press the ◀ ▶ buttons to go on scanning the frequency band and display the next station. • Go back to the beginning of step.

13 Press the ▲▼ buttons to select **Save**, then press the **OK** button to confirm manual setting.
- Repeat this procedure from step 5 onwards, until all the required stations have been stored.

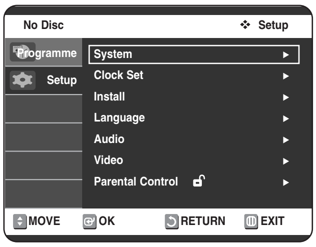
14 Press the **MENU** button to exit the menu.

Clearing a Preset Station

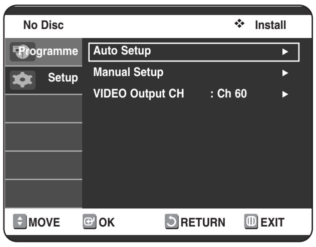
If you have stored a TV station:
- That you do not require
- At the wrong programme position you can cancel it.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

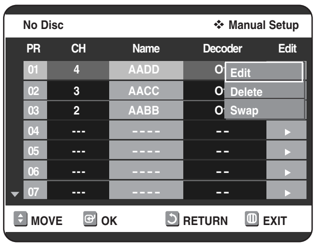
3 Press the ▲▼ buttons to select **Install**, then press the **OK** or ▶ button.


No Disc
Install
Programme
Setup
Auto Setup
Manual Setup
MOVE
OK
RETURN
EXIT

VIDEO Output CH : Ch 60

4 Press the ▲▼ buttons to select **Manual Setup**, then press the **OK** or ▶ button.

5 Press the ▲▼ buttons to select the desired PR number, then press the **OK** or ▶ button.



No Disc ❖ Manual Setup

PR	CH	Name	Decoder	Edit
01	4	AADD	O	Edit
02	3	AACC	O	Delete
03	2	AABB	O	Swap
04	---	----	--	▸
05	---	----	--	▸
06	---	----	--	▸
07	---	----	--	▸

MOVE
OK
RETURN
EXIT

6 Press the ▲▼ buttons to select **Delete**, then press the **OK** or ▶ button.

7 Repeat the same procedure from Step 5 onwards until all the required stations have been cleared.

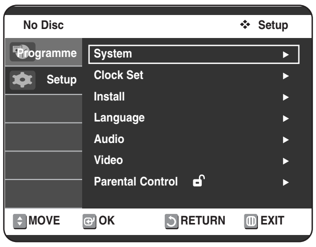
8 Press the **MENU** button to exit the menu.

Changing the Preset Manual Setup Table

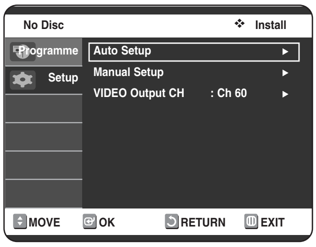
You can rearrange the Manual Setup Table and give different programme numbers to the manual setup listed according to your own preferences.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.

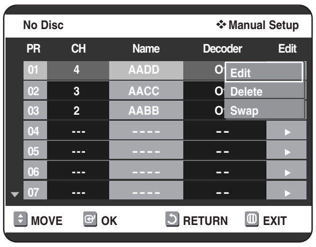

No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Install**, then press the **OK** or ▶ button.


No Disc
Install
Programme
Setup
Auto Setup
Manual Setup
VIDEO Output CH : Ch 60
MOVE
OK
RETURN
EXIT

4 Press the ▲▼ buttons to select **Manual Setup**, then press the **OK** or ▶ button.

5 Press the ▲▼ buttons to select the desired **PR** number, then press the **OK** or ▶ button.


No Disc
Manual Setup

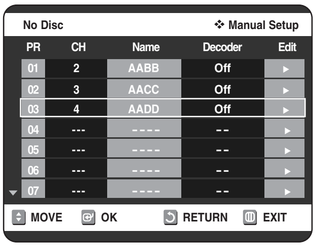
PR	CH	Name	Decoder	Edit
01	4	AADD	O	Edit
02	3	AACC	O	Delete
03	2	AABB	O	Swap
04	---	----	--	▶
05	---	----	--	▶
06	---	----	--	▶
07	---	----	--	▶

MOVE
OK
RETURN
EXIT

6 Press the ▲▼ buttons to select **Swap.**, then press the **OK** button.

- For example, to move a TV station in programme 1 to programme 3.

7 Press the ▲▼ buttons to select required position, then press the **OK** button again to swap the position.


No Disc
Manual Setup

PR	CH	Name	Decoder	Edit
01	2	AABB	Off	▶
02	3	AACC	Off	▶
03	4	AADD	Off	▶
04	---	----	--	▶
05	---	----	--	▶
06	---	----	--	▶
07	---	----	--	▶

MOVE
OK
RETURN
EXIT

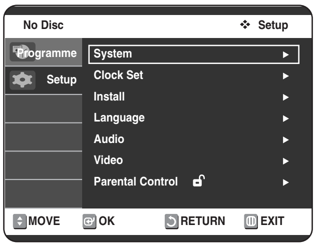
8 Press the **MENU** button to exit the menu.

VIDEO Output CH

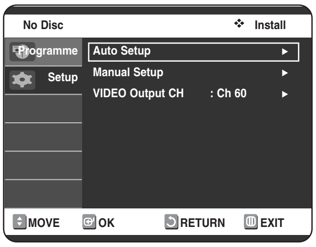
Your DVD Recorder & VCR output channel may need to be changed if the pictures suffer from interference or if your TV cannot find the pictures.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

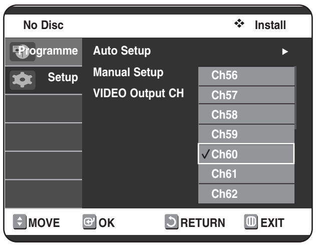
3 Press the ▲▼ buttons to select **Install**, then press the **OK** or ▶ button.


No Disc
Install
Programme
Setup
Auto Setup
Manual Setup
MOVE
OK
RETURN
EXIT

VIDEO Output CH : Ch 60

4 Press the ▲▼ buttons to select **VIDEO Output CH**, then press the **OK** or ▶ button.

5 Press the ▲▼ buttons to select the desired VIDEO Output channel, then press the **OK** or ▶ button.


No Disc
Install
Programme
Setup
Auto Setup
Manual Setup
VIDEO Output CH
Ch56
Ch57
Ch58
Ch59
Ch60
Ch61
Ch62
MOVE
OK
RETURN
EXIT

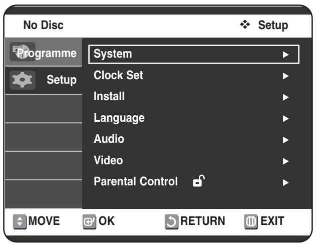
✓Ch60

Setting Up the Language Options

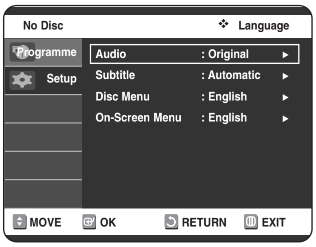
If you set audio, subtitle, disc menu and on-screen menu language in advance, they will come up automatically every time you watch a movie.
If the selected language is not recorded on the disc, the original pre-recorded language is selected.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.

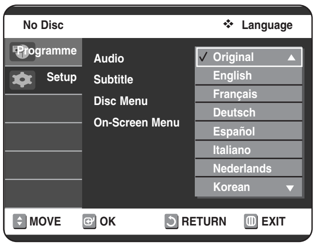

No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Language**, then press the **OK** or ▶ button.
Language setup menu will be displayed.


No Disc
Language
Programme
Setup
MOVE
OK
RETURN
EXIT

Audio : Original
Subtitle : Automatic
Disc Menu : English
On-Screen Menu : English

4 Press the ▲▼ buttons to select the desired language option, press the **OK** or ▶ button.


No Disc
Language
Programme
Setup
Audio
Subtitle
Disc Menu
On-Screen Menu
Original
English
Français
Deutsch
Español
Italiano
Nederlands
Korean
MOVE
OK
RETURN
EXIT

- **Audio** : For the disc audio language.
- **Subtitle** : For the disc subtitles.
- **Disc Menu**: For the disc menu contained on the disc.
- **On-Screen Menu**: For the on-screen menu of your DVD Recorder & VCR.

5 Press the ▲▼ buttons to select the desired language, then press the **OK** or ▶ button.

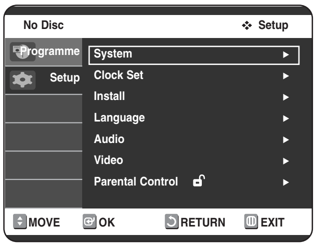
Note
- Press the **RETURN** or ◀ button to return to the previous menu. Press the **MENU** button to exit the menu.
- The selected language will only appear if it is supported on the disc.

Setting Up the Audio Options

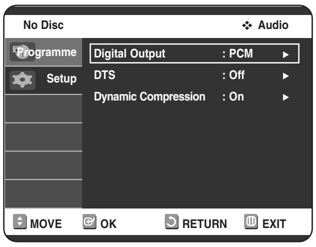
Allows you to setup the audio device and sound status settings depending on the audio system in use.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.



3 Press the ▲▼ buttons to select **Audio**, then press the **OK** or ▶ button.
Audio setup menu will be displayed.



Digital Output : PCM
DTS : Off
Dynamic Compression : On

4 Press the ▲▼ buttons to select the desired audio option, then press the **OK** or ▶ button.

5 Press the ▲▼ buttons to select the desired item, then press the **OK** or ▶ button.

Note
- Press the **RETURN** or ◀ button to return to the previous menu. Press the **MENU** button to exit the menu.

Digital Output

• **PCM** :	Converts to PCM(2CH) 48kHz audio. Select PCM when using the Analog Audio Outputs.
• **Bitstream** :	Converts to Dolby Digital Bitstream (5.1CH). Select Bitstream when using the Digital Audio Output.

Note
- Be sure to select the correct Digital Output or no audio will be heard.

DTS

- **Off** : Doesn't output digital signal.
- **On** : Outputs DTS Bitstream via digital output only. Select DTS when connecting to a DTS Decoder.

Note
- When DTS soundtrack is played, sound is not output from Analog Audio Output.

Dynamic Compression

This is only active when a Dolby Digital signal is detected.

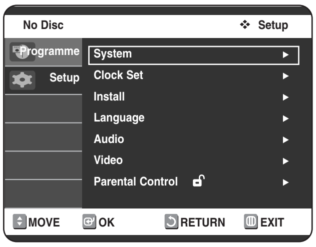
- **On** : When Movie soundtracks are played at low volume or from smaller speakers, the system can apply appropriate compression to make low-level content more intelligible and prevent dramatic passages from getting too loud.
- **Off** : You can enjoy the movie with the standard Dynamic Range.

Setting Up the Display (Video) Options

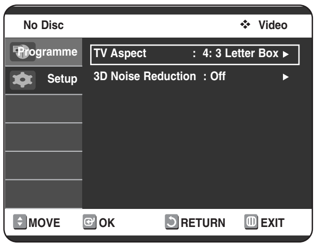
This function allows you to setup the TV screen settings.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Video**, then press the **OK** or ▶ button.
Video option menu will be displayed.


No Disc
Video
Programme
Setup
MOVE
OK
RETURN
EXIT

TV Aspect : 4: 3 Letter Box
3D Noise Reduction : Off

4 Press the ▲▼ buttons to select the desired video option, then press the **OK** or ▶ button.

5 Press the ▲▼ buttons to select the desired item, then press the **OK** or ▶ button.

Note

- Press the **RETURN** or ◀ button to return to the previous menu. Press the **MENU** button to exit the menu.

TV Aspect

Depending on the type of television you have, you may want to adjust the screen setting. (aspect ratio)

- **4:3 Letter Box** : Select when you want to see the total 16:9 ratio screen DVD supplies, even though you have a TV with a 4:3 ratio screen. Black bars will appear at the top and bottom of the screen.
- **4:3 Pan - Scan** : Select this for conventional size TV when you want to see the central portion of the 16:9 screen. (Extreme left and right side of movie picture will be cut off.)
- **16:9 Wide** : You can view the full 16:9 picture on your widescreen TV.

3D Noise Reduction (motion adaptive noise reduction)

- **Off** : Normal
- **On** : Provides a cleaner picture through noise reduction (for recording).

Note

- This function depends on disc type. It may not work for some disc types.

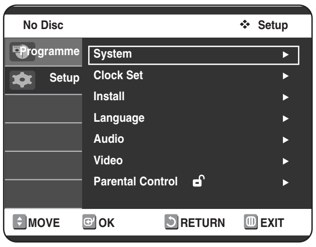
Setting Up the Parental Control

The Parental Control function works in conjunction with DVDs that have been assigned a rating - which helps you control the types of DVDs that your family watches. There are up to 8 rating levels on a disc.

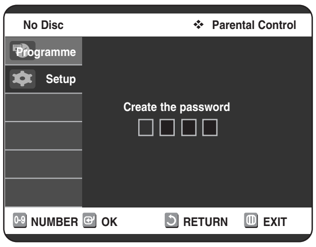
DVD-VIDEO

1 With the unit in Stop mode/No Disc mode, press the **MENU** button on the remote control.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

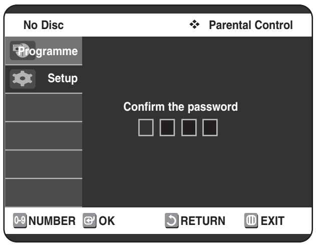
3 Press the ▲▼ buttons to select **Parental Control**, then press the **OK** or ▶ button.
- The 'Create the password' message will be displayed.


No Disc
Parental Control
Programme
Setup
NUMBER
OK
RETURN
EXIT

Create the password

☐☐☐☐

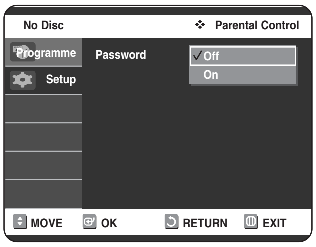
4 Enter the 4-digit password using the 0 to 9 buttons on the remote control.
- The 'Confirm the password' message will be displayed.


No Disc
Parental Control
Programme
Setup
NUMBER
OK
RETURN
EXIT

Confirm the password

☐☐☐☐

5 Enter your password again, and then press the **OK** or ▶ button.

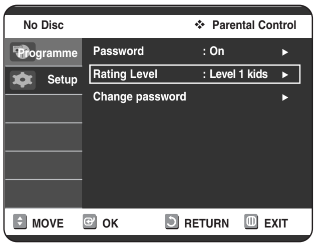

No Disc
Parental Control
Programme
Setup
Password
✓ Off
On
MOVE
OK
RETURN
EXIT

6 Press the ▲▼ buttons to select **On**, then press the **OK** or ▶ button.
The Parental Control screen appears.

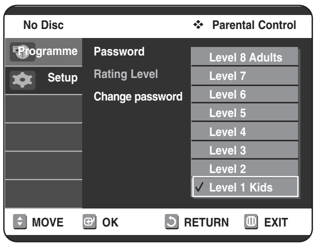
Note
- Press the **RETURN** or ◀ button to return to the previous menu. Press the **MENU** button to exit the menu.
- Refer to Troubleshooting if you forgot your password. (See page 90)

About the Rating Level

1 Press the ▲▼ buttons to select **Rating Level**, then press the **OK** or ▶ button.


No Disc
Parental Control
Programme
Setup
Change password
MOVE
OK
RETURN
EXIT

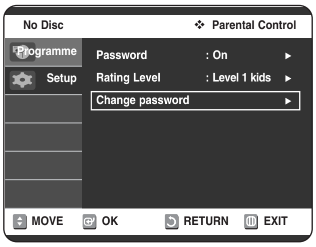
Password : On
Rating Level : Level 1 kids


No Disc
Parental Control
Programme
Setup
Password
Rating Level
Change password
Level 8 Adults
Level 7
Level 6
Level 5
Level 4
Level 3
Level 2
✓ Level 1 Kids
MOVE
OK
RETURN
EXIT

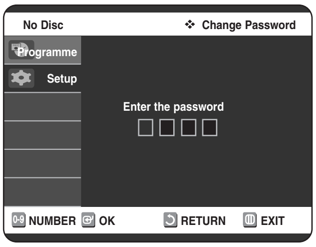
2 Press the ▲▼ buttons to select the rating level you want, then press the **OK** or ▶ button.
For example, if you select up to Level 6, discs that contain Level 7, 8 will not play. A larger number indicates that the programme is intended for adult use only.

About the Change Level

1 Press the ▲▼buttons to select **Change Password**, then press the **OK** or ▶ button.

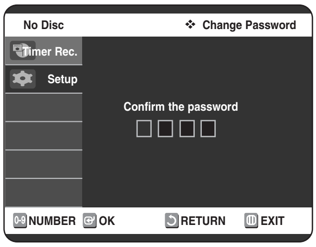

No Disc
Parental Control
Programme
Setup
MOVE
OK
RETURN
EXIT

Password : On ▶
Rating Level : Level 1 kids ▶
Change password ▶


No Disc
Change Password
Programme
Setup
NUMBER
OK
RETURN
EXIT

Enter the password
□□□□

2 Enter the 4-digit password using the 0 to 9 buttons on the remote control.
- The ‘Confirm the password.’ message will be displayed.


No Disc
Change Password
Timer Rec.
Setup
NUMBER
OK
RETURN
EXIT

Confirm the password
□□□□

3 Enter your password again using the 0 to 9 buttons on the remote control.

Note
- Press the **RETURN** or ◀ button to return to the previous menu. Press the **MENU** button to exit the menu.

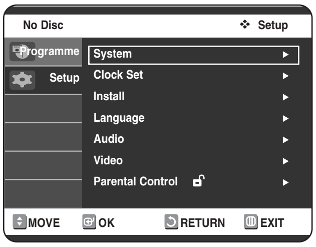
VCR Setting

If you want your videotapes to play automatically when you insert them, turn on Auto Play.

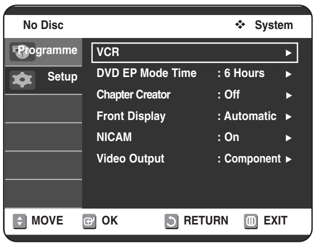
Note
- Only tapes that are missing the Record Safety Tab will play automatically when inserted.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.

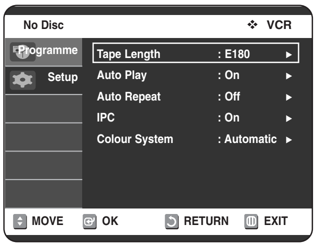

No Disc
Setup
Programme
Setup
System ▶
Clock Set ▶
Install ▶
Language ▶
Audio ▶
Video ▶
Parental Control ▶
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **System**, then press the **OK** or ▶ button.


No Disc
System
Programme
Setup
MOVE
OK
RETURN
EXIT

VCR ▶
DVD EP Mode Time : 6 Hours ▶
Chapter Creator : Off ▶
Front Display : Automatic ▶
NICAM : On ▶
Video Output : Component ▶

4 Press the ▲▼ buttons to select **VCR**, then press the **OK** or ▶ button.


No Disc
VCR
Programme
Setup
MOVE
OK
RETURN
EXIT

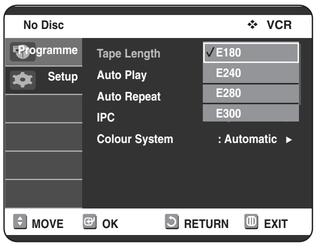
Tape Length : E180 ▶
Auto Play : On ▶
Auto Repeat : Off ▶
IPC : On ▶
Colour System : Automatic ▶

5 Press the ▲▼ buttons to select the desired VCR option, then press the **OK** or ▶ button.

6 Press the ▲▼ buttons to select the desired item, then press the **OK** or ▶ button.

Tape Length

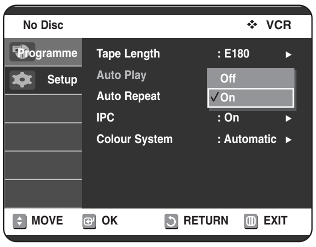
This information is usually printed on the tape box. The menu cycles through: E180, E240, E280, E300. Once the type of cassette is set, the VCR can display the amount of time remaining on the tape when you press the **DISPLAY** button.


No Disc
VCR
Programme
Setup
MOVE
OK
RETURN
EXIT

Tape Length ✓E180 E240 E280 E300
Auto Play
Auto Repeat
IPC
Colour System : Automatic ▸

Auto Play

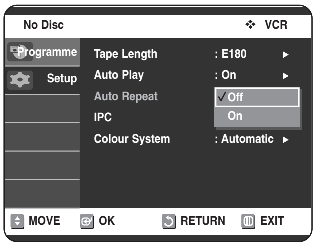
- **On** - The VCR will automatically begin playing a video tape when it is inserted, as long as the safety tab of the cassette has been removed.
- **Off** - Auto play is disabled.


No Disc
VCR
Programme
Setup
MOVE
OK
RETURN
EXIT

Tape Length : E180 ▸
Auto Play Off ✓On
Auto Repeat
IPC : On ▸
Colour System : Automatic ▸

Auto Repeat

It sets the VCR to play a tape repeatedly (unless a tape control is activated :Stop, Fast Forward or Rewind).

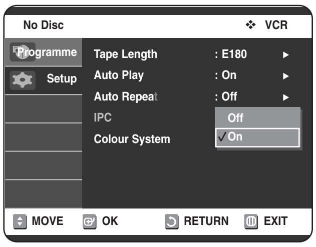

No Disc
VCR
Programme
Setup
MOVE
OK
RETURN
EXIT

Tape Length : E180 ▸
Auto Play : On ▸
Auto Repeat ✓Off On
IPC
Colour System : Automatic ▸

IPC (Intelligent Picture Control)

The Intelligent Picture Control Feature allows you to adjust the sharpness of the image automatically, according to your own preferences.

- **On** - the sharpness of the image is adjusted automatically.
- **Off** - To adjust the sharpness manually.


No Disc
VCR
Programme
Setup
MOVE
OK
RETURN
EXIT

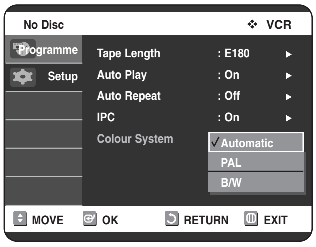
Tape Length : E180 ▸
Auto Play : On ▸
Auto Repeat : Off ▸
IPC Off ✓On
Colour System

The Intelligent Picture Control Feature can also be turned on by pressing the IPC button.

Colour System

Before recording or playing back a tape, you can select the required system standard.
Otherwise, the system automatically selects the reception standard when you select Automatic.

- When playing back a tape, the standard is automatically selected by the DVD Recorder & VCR.
- **Automatic** : When playing back a tape, the system standard is automatically selected by the DVD Recorder & VCR.
- **PAL** : PAL video system
- **B/W** : Black and White.


No Disc
VCR
Programme
Setup
MOVE
OK
RETURN
EXIT

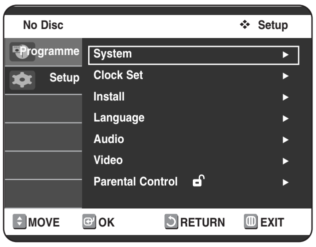
Tape Length : E180 ▸
Auto Play : On ▸
Auto Repeat : Off ▸
IPC : On ▸
Colour System ✓Automatic PAL B/W

DVD EP Mode Time

You can set the EP (Extended Play) mode's time setting to 6 or 8hours.

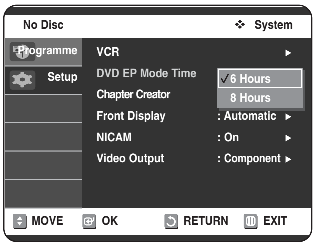
1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **System**, then press the **OK** or ▶ button.

4 Press the ▲▼ buttons to select **DVD EP Mode Time**, then press the **OK** or ▶ button.


No Disc
System
Programme
Setup
VCR
DVD EP Mode Time
Chapter Creator
Front Display
NICAM
Video Output
✓6 Hours
8 Hours
: Automatic
: On
: Component
MOVE
OK
RETURN
EXIT

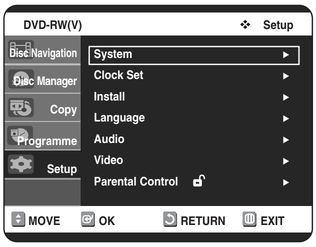
5 Press the ▲▼ buttons to select **6 Hours** or **8 Hours**, then press the **OK** or ▶ button.

Automatic Chapter Creator

This function only works with DVD-RW (V mode) and DVD-R discs.
A DVD-Video consists of 'Titles' and 'Chapters'.
When you record one program, it makes one Title.
If you use this function, the Title will be divided into Chapters.

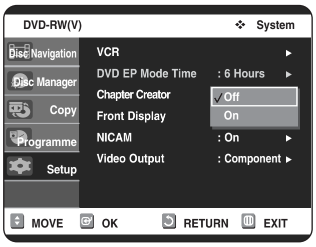
1 With the unit in Stop mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


DVD-RW(V)
Setup
Disc Navigation
Disc Manager
Copy
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **System**, then press the **OK** or ▶ button.

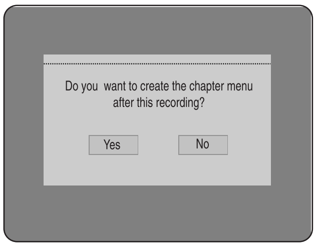
4 Press the ▲▼ buttons to select **Chapter Creator**, then press the **OK** or ▶ button.


DVD-RW(V)
System
Disc Navigation
Disc Manager
Copy
Programme
Setup
VCR
DVD EP Mode Time
Chapter Creator
Front Display
NICAM
Video Output
: 6 Hours
✓Off
On
: On
: Component
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select **On**, then press the **OK** or ▶ button.
Press the **MENU** button to exit the menu.

6 Set the recording speed by pressing the **REC SPEED** button on the remote (see page 58 for more information on recording speeds).

7 Press the **REC** button to start recording.
The message "Do you want to create the chapter menu after this recording?" is displayed.

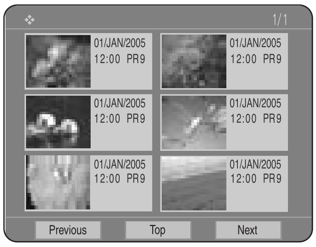


Do you want to create the chapter menu after this recording?

8 Press the ◀ ▶ buttons to select **Yes** and press the **OK** button and recording begins.
In XP and SP mode, you must record at least 5 minutes to create a chapter. In LP and EP mode, 15 minutes.

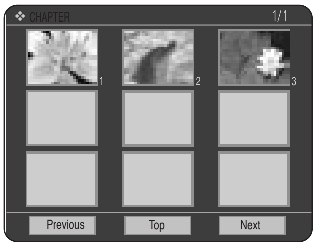
9 Press the **STOP** button to stop recording.

10 To display the created titles, finalise the disc (see page 86) and then press the **TOP MENU** button. The title menu will be displayed.



1/1
01/JAN/2005 12:00 PR9
01/JAN/2005 12:00 PR9
01/JAN/2005 12:00 PR9
01/JAN/2005 12:00 PR9
01/JAN/2005 12:00 PR9
01/JAN/2005 12:00 PR9
Previous
Top
Next

11 To display the created chapters, select the desired Title and then press the **DISC MENU** button. The chapter menu for the selected Title will be displayed.



CHAPTER
1/1
1
2
3
Previous
Top
Next

Note

- ■ On DVD-RW discs, additional chapters and titles can be added to a finalised disc by unfinalising and recording again. On DVD-RW discs, once finalised, no additional chapters or titles can be recorded.

CAUTION

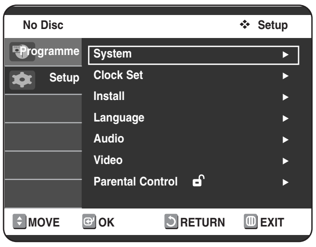
- ■ The Automatic Chapter Creator function does not work during Timer Recording or when you turn the power off.
- ■ The DVD-R disc cannot be unfinalised.

Front Display

Adjust the brightness of the unit’s front panel display.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

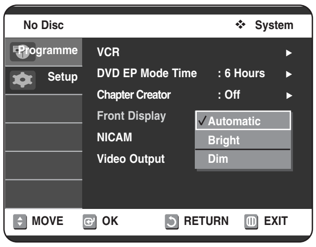
2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.



No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **System**, then press the **OK** or ▶ button.

4 Press the ▲▼ buttons to select **Front Display**, then press the **OK** or ▶ button.



No Disc
System
Programme
Setup
VCR
Front Display
NICAM
Video Output
Automatic
Bright
Dim
MOVE
OK
RETURN
EXIT

DVD EP Mode Time : 6 Hours

Chapter Creator : Off

Front Display ✓Automatic

5 Press the ▲▼ buttons to select the desired item, then press the **OK** or ▶ button.

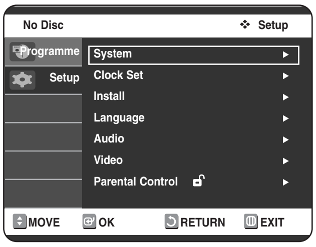
- **Automatic** – Front Panel Display will dim automatically during power off.
- **Bright** – Front Panel Display will be bright all the time.
- **Dim** – Front Panel Display will be dim all the time.

NICAM

NICAM programmes are divided into 3 types.
NICAM Stereo, NICAM Mono and Bilingual (transmission in another language).
NICAM programmes are always accompanied by a standard mono sound broadcast and you can select the desired sound.

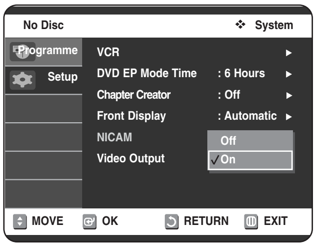
1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **System**, then press the **OK** or ▶ button.

4 Press the ▲▼ buttons to select **NICAM**, then press the **OK** or ▶ button.


No Disc
System
Programme
Setup
VCR
DVD EP Mode Time : 6 Hours
Chapter Creator : Off
Front Display : Automatic
NICAM
Video Output
Off
✓On
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select **Off** or **On**, then press the **OK** or ▶ button.

On: NICAM mode.

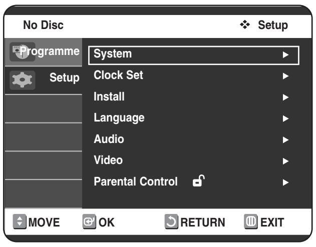
Off: Only set at this position to record the standard mono sound during a NICAM broadcast if the stereo sound is distorted due to inferior reception conditions.

Video Output

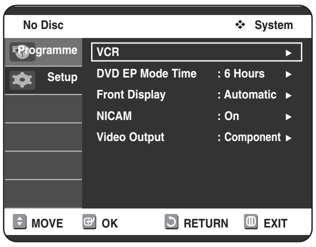
You can enjoy high quality image through RGB or Component video connection.

1 With the unit in Stop mode/No Disc mode, press the **MENU** button.

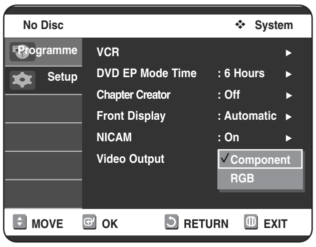
2 Press the ▲▼ buttons to select **Setup**, then press the **OK** or ▶ button.


No Disc
Setup
Programme
Setup
System
Clock Set
Install
Language
Audio
Video
Parental Control
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **System**, then press the **OK** or ▶ button.


No Disc
System
Programme
Setup
VCR
DVD EP Mode Time : 6 Hours
Front Display : Automatic
NICAM : On
Video Output : Component
MOVE
OK
RETURN
EXIT

4 Press the ▲▼ buttons to select **Video Output**, then press the **OK** or ▶button.


No Disc
System
Programme
Setup
VCR
DVD EP Mode Time : 6 Hours
Chapter Creator : Off
Front Display : Automatic
NICAM : On
Video Output
✓Component
RGB
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select **Component** or **RGB**, then press the **OK** or ▶ button.

- **Component** : Select this when the Recorder is connected to a TV with Component jack.
- **RGB** : Select this when the Recorder is connected to a TV using SCART cable.

In Component mode, you can set video output to Progressive or Interlace, see the table below.

Available video output jacks are as follow.

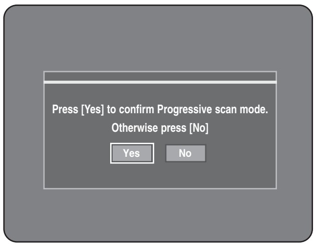
Available Video Output Jack

Setting mode Output jack		Component mode		RGB Mode
		P-SCAN off mode (Interlace mode)	P-SCAN on mode	
Component Output (Y, Pb, Pr)		O	O (TV in progressive mode)	X
AV1 Scart	R, G, B	X	X	O
	Composite	O	X	X
AV2 Scart	Composite	O	X	O
Composite Video out		O	X	O
S-Video out		O	X	O

Setting up the Progressive scan

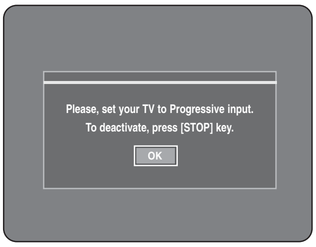
If your TV supports PAL Progressive Scan, press the **P-SCAN** button on the front of the DVD Recorder & VCR to enjoy the progressive scan.

1 With the unit in Stop mode, press the **P-SCAN** button on the front of the DVD Recorder & VCR. The message “Press [Yes] to confirm Progressive scan mode. Otherwise press [No]” will appear. Press the ◄ ► buttons to select **Yes**, and then press the **OK** button.



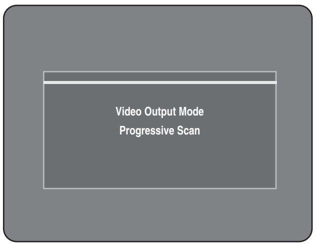
Press [Yes] to confirm Progressive scan mode.
Otherwise press [No]

2 The message “Please, set your TV to Progressive input. To deactivate, press [STOP] key.” will appear. Press the **OK** button.



Please, set your TV to Progressive input.
To deactivate, press [STOP] key.

3 The message “Video Output Mode Progressive Scan” will appear.



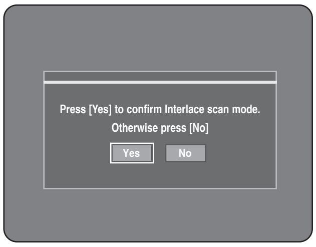
Video Output Mode
Progressive Scan

Note

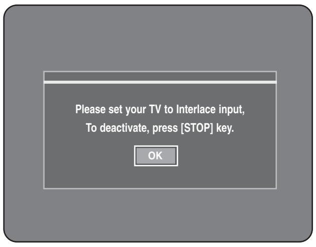
- Progressive setting is only available when the Video Out is set to Component (See page 38).
- If the **P-SCAN** button on the DVD Recorder & VCR’s front panel is pressed during playback, the message “This function is possible only on stop mode” appears on the screen.
- Progressive setting is only available when the DVD Recorder & VCR is in stop mode.

Canceling the Progressive scan

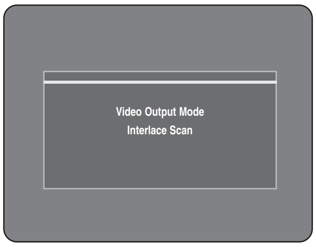
1 With the unit in Stop mode, press the **P-SCAN** button on the front of the DVD Recorder & VCR.
The message “Press [Yes] to confirm Interlace scan mode. Otherwise press [No]” will appear.
Press the ◄ ► buttons to select **Yes**, and then press the **OK** button.


Press [Yes] to confirm Interlace scan mode.
Otherwise press [No]

2 The message “Please set your TV to Interlace input. To deactivate, press [STOP] key.” will appear. Press the **OK** button.


Please set your TV to Interlace input,
To deactivate, press [STOP] key.

3 The message “Video Output Mode Interlace Scan” will appear.


Video Output Mode
Interlace Scan

Note

- Do not press the **P-SCAN** button if you are using a TV that does not support Progressive mode. Nothing will be displayed on the screen if pressed.
- If you press the **P-SCAN** button by mistake when your TV does not support Progressive mode, you need to release the Progressive mode. To release the Progressive mode, press the **P-SCAN** button on the front panel 3 times. The screen will recover after the **PSO** icon on the front panel display turns off.

Playback

This section introduces basic functions of playback by disc type.

DOLBY DIGITAL	dts	DIGITAL SOUND
Dolby Digital	DTS	Digital Audio
STEREO	PAL	MP3 DIGITAL DISC PLAYBACK
Stereo	PAL broadcast system in U.K, France, Germany, etc.	MP3

◆ *DVD Playback*

- *Before Playing 41*
- *Playing a Disc 42*
- *Using the Disc menu and Title menu 43*
- *Using the Search & Skip Functions 43*
- *Slow Motion Play / Step Motion Play 44*
- *About QUICK 44*
- *Repeat Play 45*
- *Selecting the Subtitle & Audio Language . . .47*
- *Changing the Camera Angle 48*
- *Zooming-In 48*
- *Using the Bookmarks 49*
- *Using the Markers .50*
- *Playing back an Audio CD (CD-DA) 51*
- *Playing back an MP3 Disc 52*
- *Play Option Mode .53*
- *To Programme Tracks 53*
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◆ *VCR Playback*

- *Playing back a VHS Tape (VCR) 55*
- *Tracking 55*
- *Special VCR Playback Features 55*
- *Variable Search System 56*

Before Playing

Read the following information before playing a disc.

Region code (DVD-Video only)

Both the DVD Recorder & VCR and the discs are coded by region. These regional codes must match in order for the disc to play. If the codes do not match, the disc will not play. The Region Number for this DVD Recorder & VCR is printed on the rear panel of the DVD Recorder & VCR.

Disc types that can be played

Disc Types	Disc Logo	Recorded content	Disc Shape	Max. Playing Time
DVD-VIDEO	DVD VIDEO	AUDIO + VIDEO	Single sided(5”)	240
			Double sided(5”)	480
			Single sided(3.5”)	80
			Double sided(3.5”)	160
AUDIO-CD	COMPACT disc DIGITAL AUDIO	AUDIO	Single sided(5”)	74
			Single sided(3.5”)	20
DVD-RAM	DVD RAM	AUDIO + VIDEO	Single-sided 5” (4.7GB)	1 (XP: Excellent Quality)
				2 (SP: Standard Quality)
				4 (LP: Long Playback)
				6 or 8 (EP:Extended)
			Double-sided 5” (9.4GB)	2 (XP: Excellent Quality)
				4 (SP: Standard Quality)
				8 (LP: Long Playback)
				12 or 16 (EP:Extended)
DVD-RW	DVD RW	AUDIO + VIDEO	5” (4.7GB)	1 (XP: Excellent Quality)
				2 (SP: Standard Quality)
				4 (LP: Long Playback)
				6 or 8 (EP:Extended)
DVD-R	DVD R	AUDIO + VIDEO	5” (4.7GB)	1 (XP: Excellent Quality)
				2 (SP: Standard Quality)
				4 (LP: Long Playback)
				6 or 8 (EP:Extended)
CD-R/RW DVD-RAM/-RW/-R		JPEG MP3	-	-

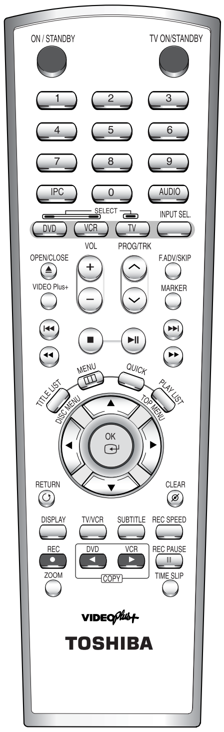
Discs that cannot be played

- DVD-Video with a region number other than “2” or “ALL”
- 3.9 GB DVD-R Disc for Authoring.
- DVD-RAM not recorded following the Video Recording Standard
- Unfinalised DVD-R recorded on other equipment.
- DVD-ROM/DVD+RW/PD/MV-Disc, etc
- CVD/CD-ROM/CDV/CD-G/CD-I

Note

- This DVD Recorder & VCR can only operate with discs that are compatible with DVD-RAM Standard Version 2.0.
- Playback and/or recording may not work for some types of discs, or when specific operations, such as angle change and aspect ratio adjustment, are being performed. Information about the discs is written in detail on the box. Please refer to this if necessary.
- Do not allow the disc to become dirty or scratched, fingerprints, dirt, dust, scratches or deposits of cigarette smoke on the recording surface may make it impossible to use the disc for recording.
- DVD-RAM/-RW/-R discs may not be able to play on some DVD players, depending on the player, disc and the condition of the recording.
- Discs with NTSC programmes recorded on them cannot be recorded using this DVD Recorder & VCR.

Playing a Disc


ON / STANDBY
TV ON/STANDBY
1
2
3
4
5
6
7
8
9
IPC
0
AUDIO
SELECT
INPUT SEL
DVD
VCR
TV
VOL
PROG/TRK
OPEN/CLOSE
F.ADV/SKIP
VIDEO Plus+
MARKER
MENU
QUICK
TITLE LIST
PLAY LIST
DISC MENU
TOP MENU
OK
RETURN
CLEAR
DISPLAY
TV/VCR
SUBTITLE
REC SPEED
REC
DVD
VCR
REC PAUSE
ZOOM
COPY
TIME SLIP
VIDEO Plus+
TOSHIBA

1 Press the **DVD** button to select the DVD mode.

2 Press the **OPEN/CLOSE** button.

3 Place a disc gently into the tray with the disc's label facing up.

4 Press **OPEN/CLOSE** button to close the disc tray.

- Your DVD Recorder & VCR closes the disc tray and plays the disc automatically.
- The recorder does not play discs automatically after the initial power on.
- When the recorder is powered on and a disc is in the tray, the unit will be activated and wait in stop status.
- Press the **PLAY** button to start playback.
- If you insert an MP3 Disc, your DVD Recorder & VCR will display the file list on the screen and start playing.
- If you insert a JPEG Disc, folders and files are displayed in thumbnail picture.

5 Press the **STOP** button to stop playback.

Note

- When you stop playing back a disc, the DVD Recorder & VCR remembers where you stopped, When you press **PLAY** button again, it will pick up where you left off. (unless the disc is removed or the DVD Recorder & VCR is unplugged, or if you press the **STOP** button twice.) This function is only applicable to DVD-VIDEO/DVD-RAM/-RW/-R or audio CDs (CD-DA).

CAUTION

- Do not move your DVD Recorder & VCR while playing, as this may cause damage to the disc.
- Make sure to press the **OPEN/CLOSE** button to open or close the disc tray.
- Do not push the disc tray while it is being opened or closed, as this may cause a product malfunction.
- Do not place foreign materials on or in the disc tray.
- Some functions may perform differently or be disabled depending on the disc type. If this occurs, refer to the instructions written on the disc case.
- Be especially careful that children's fingers are not caught between the disc tray and the tray chassis when it closes.
- After turning power on, it will take about 10 seconds before the DVD Recorder & VCR operates.

Using the Disc Menu and Title Menu

Some discs contain a dedicated menu system that allows you to select special functions for title, chapters, audio track, subtitles, film previews, information on characters, etc.

For DVD-VIDEO disc

DVD-VIDEO

1 Press the **DISC MENU** button to enter the disc menu of the disc.

- Move to the setup menu related to playback operation.
- You can select audio language and subtitle etc. provided by the disc.

2 Press the **TOP MENU** button to move to the title menu of the disc.

- Use this button if the disc contains more than one title. Some discs may not support the title menu functionality.

For DVD-RAM/-RW/-R disc

DVD-RAM DVD-RW DVD-R

1 Press the **TITLE LIST** button to display title list.

Note

- ■ Title List : Title refers to a recorded video stream. Title List shows a list to help you select a title. Since the title list consists of the information on stream that is actually recorded, if one title is deleted, that title cannot be played again.
- ■ Play List : This refers to a unit of playback, which is made by selecting a desired scene in the entire Title List. When one playlist is played, only the scene selected by the user will play and then stop. Since only the information necessary for playing a desired scene is included in a playlist, even if that playlist is deleted, the original data will not be deleted.

Using the Search & Skip Functions

Searching through a Chapter or Track

DVD-VIDEO DVD-RAM DVD-RW DVD-R CD

During the playback, press the **SEARCH** ◀◀ or ▶▶ button on the remote control. Each time you press the **SEARCH** button, the playback speed will change as follows.

DVD-VIDEO/DVD-RAM/-RW/-R	▶▶Fast X 2 → ▶▶Fast X 4 → ▶▶Fast X 8 → ▶▶ Fast X 16 → ▶▶Fast X 32 → ▶▶Fast X 128
AUDIO CD(CD-DA)	→ ▶▶Fast X 2 → ▶▶Fast X 4 → ▶▶Fast X 8

- You can scan the programme in reverse order. To return to normal speed playback, press the ▶II button.

Note

- ■ No sound is heard during Scan(Search) mode, except CDs (CD-DA).

Skipping Chapters or Tracks

DVD-VIDEO DVD-RAM DVD-RW DVD-R CD

During the playback, press the I◀◀ or ▶▶I button on the remote control.

- **If you press the I◀◀ button**
  If you press the I◀◀ button after more than 3 seconds of playbck, it moves to the beginning of the chapter, track or marker (DVD-RAM/-RW(VR mode)). Pressing the button again in quick succession to return to the beginning of the previous chapter, track or marker(DVD-RAM/-RW (VR mode)).
- **If you press the ▶▶I button**
  If you press the ▶▶I button, it moves to the next chapter, track or marker(DVD-RAM/-RW(VR mode)).

Skipping ahead 30 seconds

DVD-VIDEO DVD-RAM DVD-RW DVD-R

In play mode, press **F.ADV/SKIP** button to skip ahead exactly 30 seconds.

Slow Motion Play/ Step Motion Play

Slow Motion Play

DVD-VIDEO DVD-RAM DVD-RW DVD-R

During pause mode, press the SEARCH ◀◀ or ▶▶ button on the remote control for more than 1 second.

- Each time you press the ▶▶ button :
  I▶ Slow 1/8 → I▶ Slow 1/4 → I▶ Slow 1/2

- Each time you press the ◀◀ button :
  ◀I Slow 1/8 → ◀I Slow 1/4 → ◀I Slow 1/2

To return to normal speed playback, press the ▶II button.

Step Motion Play

DVD-VIDEO DVD-RAM DVD-RW DVD-R

During pause mode, press the **F.ADV/SKIP** button on the remote control.
- Each time the button is pressed, a new frame will appear.

To return to normal speed playback, press the ▶II button.

Note
- No sound is heard during STEP or SLOW mode.

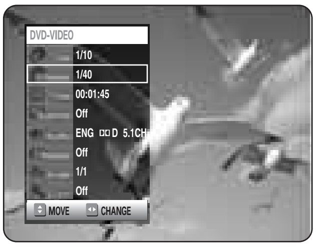
About QUICK

The QUICK functions allows you to easily search for a desired scene by accessing title, chapter, track and time. You can also change the subtitle and audio settings and set some features including Repeat, Angle and Zoom.

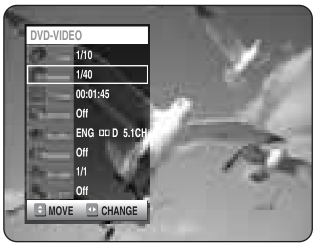
Moving to a scene directly using the QUICK

- If you want to move to a title, a chapter or a track to find a desired scene.

1 Press the **QUICK** button during playback.



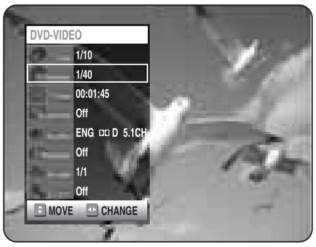
2 Press the ▲▼ buttons to select **Title**, **Chapter** or **Track** .



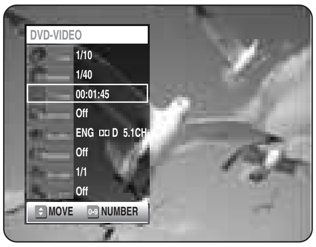
3 Press the ◀▶ buttons or number (0~9) buttons to select the desired scene.
Then, press the **OK** button.

- If you want to move to a desired time to help you find a scene.

1 Press the **QUICK** button during playback.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/1
Off
MOVE
CHANGE

2 Press the ▲▼ buttons to select **Time.**


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/1
Off
MOVE
NUMBER

3 Enter the time in the sequence of hours, minutes, and seconds using the number buttons, then press the **OK** button.

Note

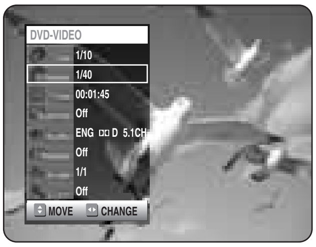
- This may not work for some discs. When an audio CD (CD-DA) or an MP3 disc is inserted, according to a disc type, the information display may not be appear.
- The Time Search function does not operate in some discs.
- To make the screen disappear, press the **QUICK** button again.

Repeat Play

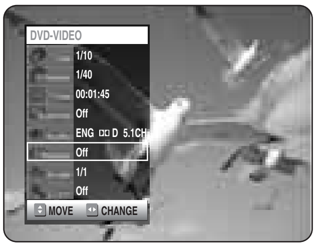
Playing Repeatedly (Repeat Playback)

DVD-VIDEO DVD-RAM DVD-RW DVD-R

1 Press the **QUICK** button during playback.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/1
Off
MOVE
CHANGE

2 Press the ▲▼ buttons to select **Repeat**.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/1
Off
MOVE
CHANGE

3 Select repeat mode (Title or Chapter) using ◄► button.
Press the **OK** button.
- To make the screen disappear, press the **QUICK** or **RETURN** button.

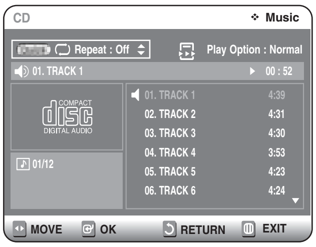
Note

- DVD-RAM, DVD-RW(VR mode), unfinalised DVD-RW (V mode) and unfinalised DVD-R do not repeat a chapter.

Playing Repeatedly (Repeat Playback)

CD MP3

1 Press the **QUICK** button during playback. Repeat is highlighted.


CD
Music
Repeat : Off
Play Option : Normal
01. TRACK 1
00 : 52
COMPACT disc DIGITAL AUDIO
01/12
01. TRACK 1 4:39
02. TRACK 2 4:31
03. TRACK 3 4:30
04. TRACK 4 3:53
05. TRACK 5 4:23
06. TRACK 6 4:24
MOVE
OK
RETURN
EXIT

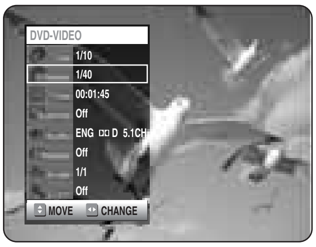
2 Press the ▲▼ buttons to select the **Track** or **Disc** you want to play repeatedly. Press the **OK** button. For MP3 discs, you can select **Track**, **Folder** or **Disc**.

3 **To return to normal playback**
Press the **CLEAR** button to return to normal playback.

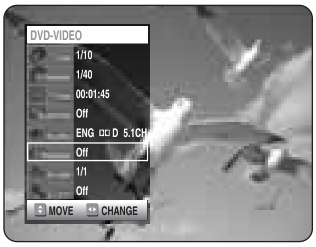
Playing a Certain section Repeatedly (A-B Repeat Playback)

DVD-VIDEO DVD-RAM DVD-RW DVD-R

1 Press the **QUICK** button during playback.

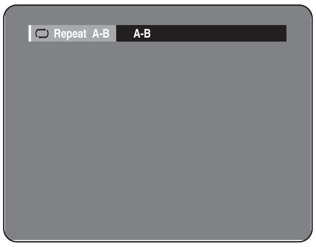

DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG DD D 5.1CH
Off
1/1
Off
MOVE
CHANGE

2 Press the ▲▼ buttons to select **Repeat**.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG DD D 5.1CH
Off
1/1
Off
MOVE
CHANGE

3 Press the ◄► button to select the **A-B**, then press the **OK** button.

4 Press the **OK** button at the point where you want the repeat play to start (A) and press it again at the point where you want the repeat play to stop (B). Repeat playback of the A-B section starts.


Repeat A-B
A-B

Note
- If you set point (B) before five seconds has lapsed, the prohibition mark (⊘) will appear.
- Audio CDs (CD-DA) and MP3 discs do not support the Repeat A-B function.

5 **To return to normal playback**
Press the **CLEAR** button to return to normal playback.

Selecting the Subtitle & Audio Language

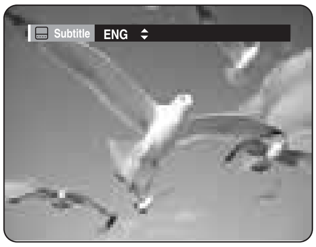
DVD-VIDEO DVD-RAM DVD-RW
(VR mode)

Selecting the SUBTITLE language

Subtitle languages may not work depending on the disc type. This is only available during playback.

Using the SUBTITLE button

1 Press the **SUBTITLE** button during playback.

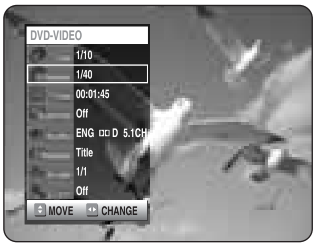

Subtitle
ENG

2 Press the ▲▼ buttons to select the desired subtitle language.
- To make the screen disappear, then press the **CLEAR** or **RETURN** button.

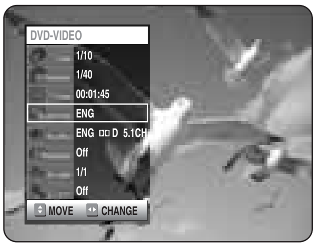
QUICK

Using the QUICK button

1 Press the **QUICK** button during playback.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Title
1/1
Off
MOVE
CHANGE

2 Press the ▲▼ buttons to select **Subtitle**, then press the ◀▶ buttons to select the desired subtitle language.


DVD-VIDEO
1/10
1/40
00:01:45
ENG
ENG D 5.1CH
Off
1/1
Off
MOVE
CHANGE

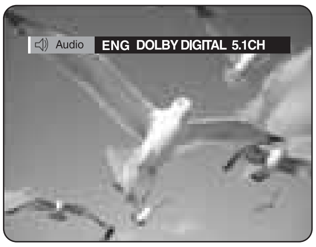
Note
- The subtitle display may be different depending on the disc type.
- Some discs allow you to select the language from the disc menu only.

Selecting the Audio language

Audio languages may not work depending on the disc type. This is only available during playback.

Using the AUDIO button

1 Press the **AUDIO** button during playback.

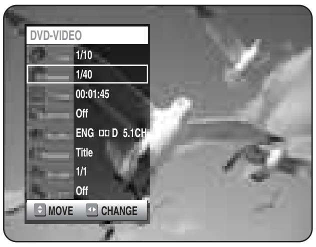

Audio
ENG DOLBY DIGITAL 5.1CH

2 Press the ▲▼ buttons to select the desired audio language.

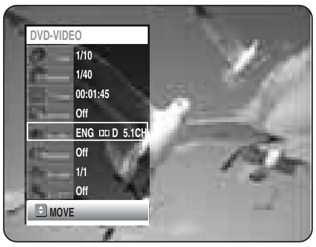
QUICK

Using the QUICK button

1 Press the **QUICK** button during playback.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Title
1/1
Off
MOVE
CHANGE

2 Press the ▲▼ buttons to select **Audio**, then press the ◀▶ buttons to select the desired audio language.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/1
Off
MOVE

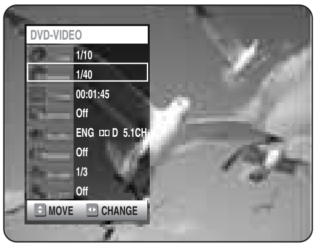
Note
- Audio languages may be different because they are disc-specific.
- Some discs allow you to select the audio language from the disc menu only.

Changing the Camera Angle

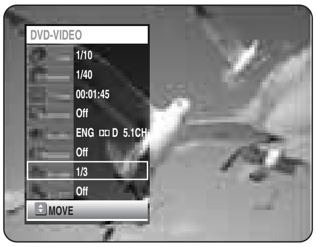
DVD-VIDEO

Using the QUICK button

1 Press the **QUICK** button during playback.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/3
Off
MOVE
CHANGE

2 Press the ▲▼ buttons to select **Angle**, then press the ◄► buttons or number (0~9) buttons to select the desired angle scene.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/3
Off
MOVE

Note

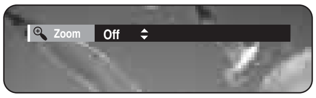
- This function is disc-dependent, and may not work all DVDs.
- This function does not work when a DVD has not been recorded with a multi-camera angle system.

Zooming-In

DVD-VIDEO DVD-RAM DVD-RW DVD-R

Using the ZOOM button

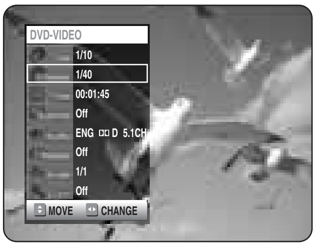
1 Press the **ZOOM** button during playback.



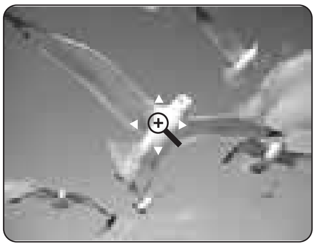
2 Press the ▲▼ buttons to select **On** or **Off**.

Using the QUICK button

1 Or use the **QUICK** button during playback.


DVD-VIDEO
1/10
1/40
00:01:45
Off
ENG D 5.1CH
Off
1/1
Off
MOVE
CHANGE

2 Press the ▲▼ buttons to select Zoom, then press the **OK** button. (🔍) will be displayed.



3 Press ▲▼, ◄► buttons to move to the area you want to enlarge.

DVD-VIDEO/ DVD-RAM/-RW/-R	normal size→X2→X4→X2→normal size

4 Press the **OK** button.
The screen will be enlarged to twice the normal size. The screen size will be enlarged to four times the normal size.

Note

- When recording is done in the EP mode, the Zoom function will not be supported. (except when the recording has been done in V mode)

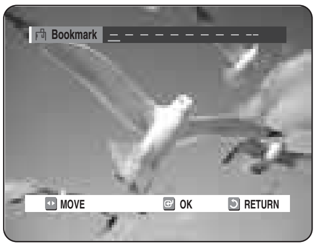
Using the Bookmarks

DVD-VIDEO DVD-RW DVD-R

(V mode)

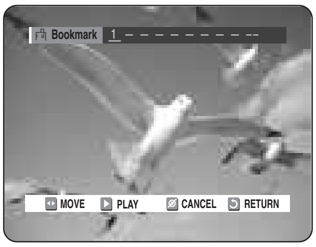
Set marks at scenes you want to see again so that you can start playback from the marked position.

1 Press the **MARKER** button during playback.


Bookmark
MOVE
OK
RETURN

2 Press the **OK** button when the desired scene appears.

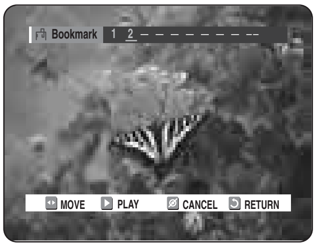
- The number 1 is displayed and the scene is memorized.


Bookmark 1
MOVE
PLAY
CANCEL
RETURN

3 Press the ◀ ▶ button to move to the next position.

4 Press the **OK** button again when the desired scene appears.

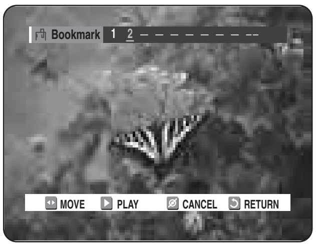
- The number 2 is displayed and the scene is memorized. Repeat above to bookmark other positions. You can bookmark up to 10 scenes.


Bookmark 1 2
MOVE
PLAY
CANCEL
RETURN

Playing back a Bookmark

1 Press the **MARKER** button.

2 Press the ◀ ▶ buttons to select a bookmarked scene.

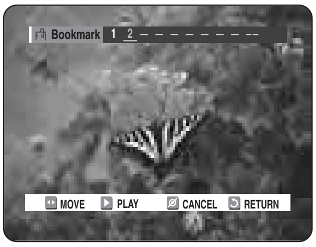

Bookmark 1 2
MOVE
PLAY
CANCEL
RETURN

3 Press the **OK** or **▶II** button to start playing from the selected scene.

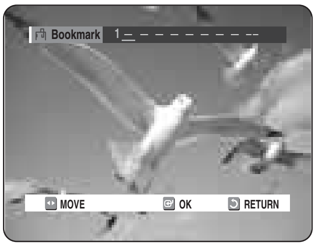
Clearing a Bookmark

1 Press the **MARKER** button.

2 Press the ◀ ▶ buttons to select a bookmarked scene.


Bookmark 1 2
MOVE
PLAY
CANCEL
RETURN

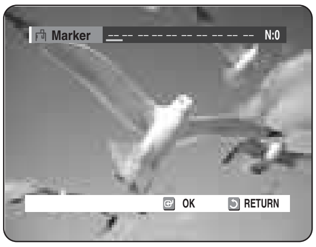
3 Press the **CLEAR** button to delete the selected bookmark.


Bookmark 1
MOVE
OK
RETURN

Using the Markers

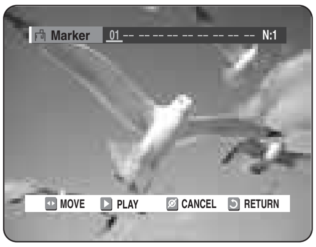
DVD-RAM DVD-RW
(VR mode)

1 Press the **MARKER** button during playback.


Marker
-- -- -- -- -- -- -- -- -- --
N:0
OK
RETURN

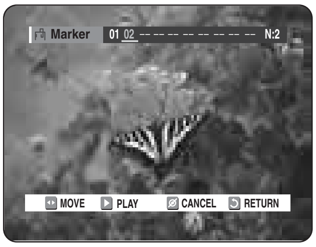
2 Press the **OK** button when the desired scene appears.

- The number 01 is displayed and the scene is memorized.


Marker
01 -- -- -- -- -- -- -- -- --
N:1
MOVE
PLAY
CANCEL
RETURN

3 Press the ◄► button to move to the next position.

4 Press the **OK** button again when the desired scene appears.

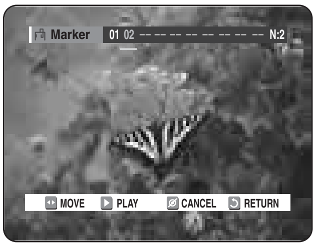

Marker
01 02 -- -- -- -- -- -- -- --
N:2
MOVE
PLAY
CANCEL
RETURN

- The number 02 is displayed and the scene is memorized.
- DVD-RAM or DVD-RW (VR mode) discs have the Marker function instead of the Bookmark function. The Marker function allows you to mark up to 99 scenes. Since the scenes may be displayed as many different pages, numbering is necessary. If a disc in use is encoded with disc Protect, Markers cannot be set or delete. Only playback is available.

Playing back a Marker

1 Press the **MARKER** button during playback.

2 Press the ◄► buttons to select a marked scene.


Marker
01 02 -- -- -- -- -- -- -- --
N:2
MOVE
PLAY
CANCEL
RETURN

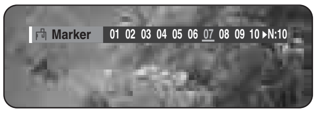
3 Press the **OK** or **►II** button to start playing from the selected scene.

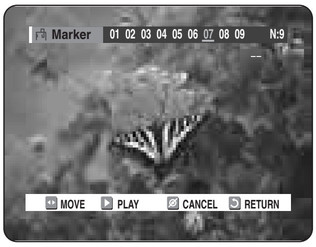
- If you press the **NEXT SKIP** (**►►I**) button, playback starts from the next marked point.
- If you press the **PREVIOUS SKIP** (**I◄◄**) button after playing the marked point for longer than 3 seconds, playback will start from the beginning of the current marked point. To start playback from previous marked point, press **PREVIOUS SKIP** (**I◄◄**) button again.

Clearing a Marker

1 Press the **MARKER** button during playback.

2 Press the ◄► buttons to select a marked scene. Press the **CLEAR** button to delete the selected mark.


Marker
01 02 03 04 05 06 07 08 09 10 ►N:10


Marker
01 02 03 04 05 06 07 08 09 --
N:9
MOVE
PLAY
CANCEL
RETURN

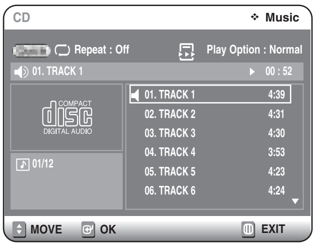
- When a marker is cleared while DVD-RAM/-RW (VR mode) is playing, marker numbers will change. For example, if the 7th marker is cleared after ten markers are registered, the marker numbers after the eighth will automatically move ahead by one and the 8th marker becomes the 7th.

Playing back an Audio CD (CD-DA)

Each disc has a variety of menu functions available.

Playing back an Audio CD(CD-DA)

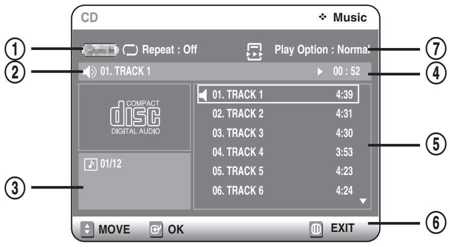
1 Insert an audio CD (CD-DA) into the disc tray.
- The audio CD menu appears and the tracks (songs) are played automatically.


CD
Music
Repeat : Off
Play Option : Normal
01. TRACK 1
00 : 52
COMPACT disc DIGITAL AUDIO
01/12
01. TRACK 1 4:39
02. TRACK 2 4:31
03. TRACK 3 4:30
04. TRACK 4 3:53
05. TRACK 5 4:23
06. TRACK 6 4:24
MOVE
OK
EXIT

- Press the menu button when the audio CD menu disappear. Press the ▲▼ buttons to select Disc Navigation, and then press the **OK** button twice.

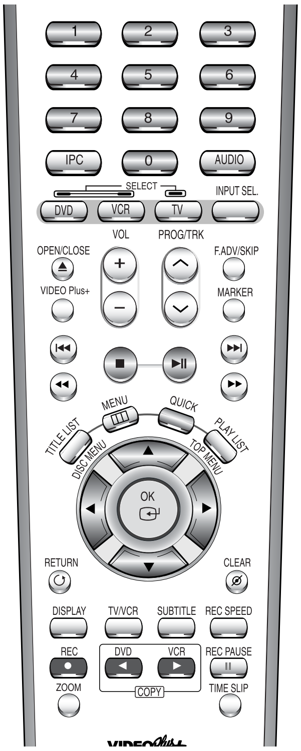
2 Press the ▲▼ buttons to select the track (song) to start playback from, and then press the **OK** button.
- You can also select the track (song) by pressing the number buttons on the remote control.

Audio CD (CD-DA) Screen Elements


CD
Music
Repeat : Off
Play Option : Normal
01. TRACK 1
00 : 52
COMPACT disc DIGITAL AUDIO
01/12
01. TRACK 1 4:39
02. TRACK 2 4:31
03. TRACK 3 4:30
04. TRACK 4 3:53
05. TRACK 5 4:23
06. TRACK 6 4:24
MOVE
OK
EXIT
①
②
③
④
⑤
⑥
⑦

1. **Repeat mode**: Repeat off/Repeat Track/Repeat Disc.
2. **Current track (song)**: Displays the number of the track currently being played.
3. Displays the current play index and total track number.
4. This shows the operating state of a disc and a playback time corresponding to a portion that is currently played.
5. Displays the track list (song list) and the playing time of each track.
6. Button display.
7. **Play Option**: Normal, Random, Intro or Playlist

Buttons on the Remote Control used for CD playback

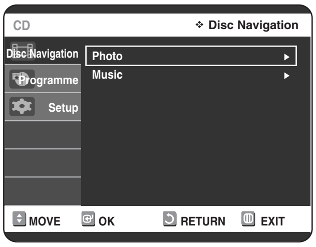

1
2
3
4
5
6
7
8
9
IPC
0
AUDIO
SELECT
INPUT SEL.
DVD
VCR
TV
VOL
PROG/TRK
OPEN/CLOSE
F.ADV/SKIP
VIDEO Plus+
MARKER
MENU
QUICK
TITLE LIST
PLAY LIST
DISC MENU
TOP MENU
OK
RETURN
CLEAR
DISPLAY
TV/VCR
SUBTITLE
REC SPEED
REC
DVD
VCR
REC PAUSE
ZOOM
COPY
TIME SLIP

1. **▲▼, 0~9 :** Selects a track (song).
2. **► :** Plays the selected track (song).
3. **OK button :** Plays the selected track (song).
4. **►►I button :** Plays the next track.
5. **I◄◄ button :** Returns to the beginning of the current track when pressed during playback.
   If pressed again, playback starts from the beginning of the preceding track.
   If you press this button within three seconds after playback starts, the previous track will be played.
   If you press this button after three seconds, the current track will be replayed from the beginning.
6. **Press the (◄◄/►►) button :** Fast Play (►►X2, ►►X4, ►►X8)
7. **■ :** Stops a track(song).
8. **►II :** Plays a track(song) or pauses playback.
9. **QUICK :** To select the top menu on screen display (Repeat or Play Option).

Playing back an MP3 Disc

Playing back an MP3 Disc

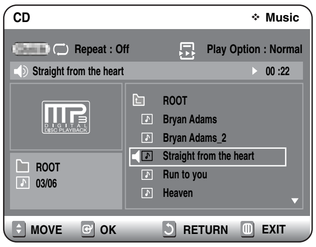
1 Insert an MP3 CD into the disc tray.
Press the ▲▼ buttons to select the **Disc Navigation**, and then press the **OK** or ▶ button.


CD
Disc Navigation
Disc Navigation
Programme
Setup
Photo
Music
MOVE
OK
RETURN
EXIT

- Only disc with both JPEG files and MP3 files will display the Disc Navigation menu.
- For disc with only mp3 files, the mp3 menu is displayed and the tracks (songs) are played automatically.

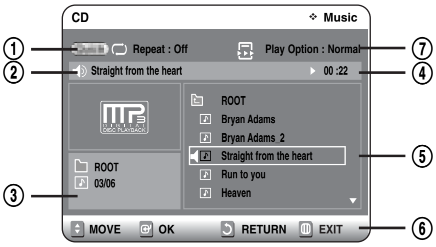
2 Press the ▲▼ buttons to select the **Music**, and then press the **OK** or ▶ button.

3 Press the ▲▼ buttons to select the folder you want to hear, and then press the **OK** button.


CD
Music
Repeat : Off
Play Option : Normal
Straight from the heart
00 :22
ROOT
Bryan Adams
Bryan Adams_2
Straight from the heart
Run to you
Heaven
ROOT
03/06
MOVE
OK
RETURN
EXIT

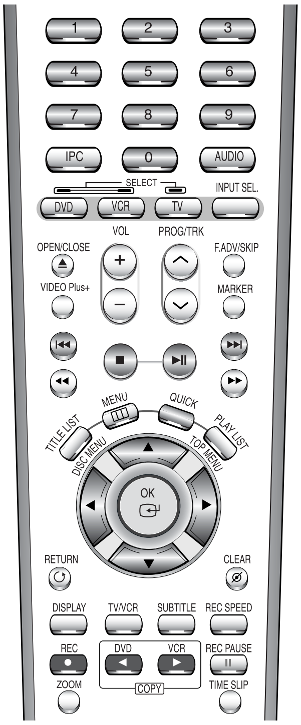
- Press the ▲▼ buttons to select the track (song) you want to hear, and then press the **OK** button.
- You can also select the desired track (song) by pressing the number buttons on the remote control.

MP3 Screen Elements


CD
Music
Repeat : Off
Play Option : Normal
Straight from the heart
00 :22
ROOT
Bryan Adams
Bryan Adams_2
Straight from the heart
Run to you
Heaven
ROOT
03/06
MOVE
OK
RETURN
EXIT
①
②
③
④
⑤
⑥
⑦

1. **Repeat mode :** Repeat off, Repeat Track, Repeat Folder or Repeat Disc
2. **Current track (song) :** Displays the name of the track being played.
3. Displays the current folder and play index.
4. This shows the operating state of a disc and a playback time corresponding to a portion that is currently played.
5. Displays the information for the folder and its tracks.
6. Button display.
7. **Play Option :** Normal, Random, Intro or Playlist

Buttons on the Remote Control used for MP3 playback

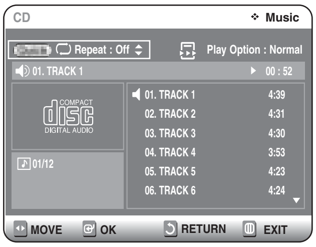

1
2
3
4
5
6
7
8
9
IPC
0
AUDIO
SELECT
INPUT SEL.
DVD
VCR
TV
VOL
PROG/TRK
OPEN/CLOSE
F.ADV/SKIP
VIDEO Plus+
MARKER
MENU
QUICK
TITLE LIST
PLAY LIST
DISC MENU
TOP MENU
OK
RETURN
CLEAR
DISPLAY
TV/VCR
SUBTITLE
REC SPEED
REC
DVD
VCR
REC PAUSE
ZOOM
COPY
TIME SLIP

1. **▲▼, 0~9:** Selects a track (song).
2. **▶ :** Plays the selected track (song).
3. **OK button:** Plays the selected track (song) or displays the files in the selected folder.
4. **RETURN button:** Moves to the folder to which the current song belongs.
5. **▶▶I button:** Plays the next track.
6. **I◀◀ button:** Returns to the beginning of the current track when pressed during playback. If pressed again, playback starts from the beginning of the preceding track.
   If you press this button within three seconds after playback starts, the previous track will be played.
   If you press this button after three seconds, the current track will be replayed from the beginning.
7. **■ :** Stops a track(song).
8. **▶II :** Plays a track(song) or pauses playback.
9. **QUICK :** To select the top menu on screen display (Repeat or Play Option).

Play Option Mode

The Play Option can be used with an audio CD or MP3 in the Play or Stop mode.

1 Press the **QUICK** button during playback.
Repeat mode will be highlighted.

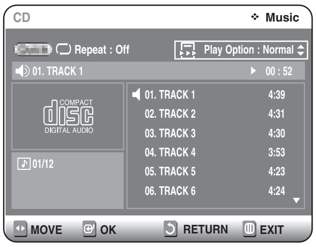


Repeat : Off
Play Option : Normal
01. TRACK 1 ▶ 00 : 52
01/12

01. TRACK 1	4:39
02. TRACK 2	4:31
03. TRACK 3	4:30
04. TRACK 4	3:53
05. TRACK 5	4:23
06. TRACK 6	4:24

- During Stop, Play option will be highlighted.

2 Press the ◄ ► buttons to select **Play Option**.



Repeat : Off
Play Option : Normal
01. TRACK 1 ▶ 00 : 52
01/12

01. TRACK 1	4:39
02. TRACK 2	4:31
03. TRACK 3	4:30
04. TRACK 4	3:53
05. TRACK 5	4:23
06. TRACK 6	4:24

3 Press the ▲▼ buttons to select a desired Play option, then press the **OK** button.

- **Normal** : Tracks on a disc are played in the order in which they were recorded on the disc.
- **Random** : The Random option plays a disc's tracks in random order. After a random list is generated and played completely, another random list is generated and played. Random Play is continued until the play option is changed.
- **Intro** : The first 10 seconds of each track will be played.If you want to listen to the music that you have selected, press the **OK** button or **▶II** button. The play option will be changed to Normal Play. When Intro Play is completed, Normal Play is performed.
- **Playlist** : The Playlist playback option allows you to select the order in which you want tracks to play.

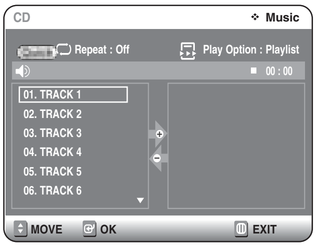
To Programme Tracks

You can register a maximum 30 tracks in the playlist.

1 Press the **QUICK** button during playback.
Repeat mode will be highlighted.
- During Stop, Play option will be highlighted.

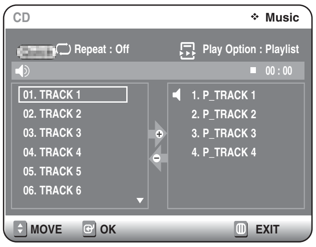
2 Press the ◄ ► buttons to select **Play Option**.

3 Press the ▲▼ buttons to select **Playlist**, then press the **OK** button.
Playlist screen is displayed.



Repeat : Off
Play Option : Playlist
■ 00 : 00
01. TRACK 1
02. TRACK 2
03. TRACK 3
04. TRACK 4
05. TRACK 5
06. TRACK 6

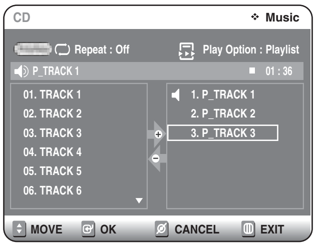
4 Press the ▲▼ buttons to select tracks in the order in which you want them to play, then press the **OK** button.



Repeat : Off
Play Option : Playlist
■ 00 : 00

01. TRACK 1	1. P_TRACK 1
02. TRACK 2	2. P_TRACK 2
03. TRACK 3	3. P_TRACK 3
04. TRACK 4	4. P_TRACK 4
05. TRACK 5	
06. TRACK 6	

5 If you playlisted a wrong track, press the ▶ button, then press the ▲▼ buttons to select wrong track. Press the **CLEAR** button. The wrong track will be removed.



Repeat : Off
Play Option : Playlist
P_TRACK 1 ■ 01 : 36

01. TRACK 1	1. P_TRACK 1
02. TRACK 2	2. P_TRACK 2
03. TRACK 3	3. P_TRACK 3
04. TRACK 4	
05. TRACK 5	
06. TRACK 6	

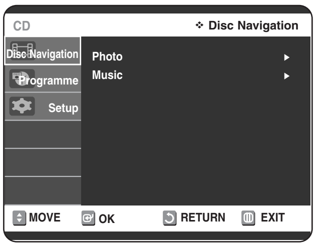
6 Press the **PLAY** button to playback the playlist.
- The playlist will be played continuously until stop button is pressed.

Playing back a Picture Disc

JPEG

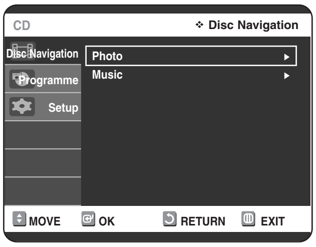
There are two types of Picture CD. One is a CD with only JPEG files. The other one is a CD with JPEG files and MP3 files.(mixed CD)

1 Insert a JPEG into the disc tray.


CD
Disc Navigation
Disc Navigation
Programme
Setup
Photo
Music
MOVE
OK
RETURN
EXIT

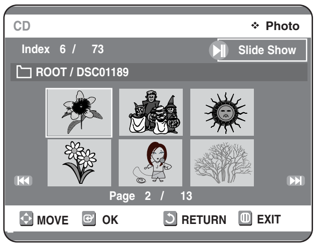
- The picture menu is displayed (as in Step 4) when the CD with only JPEG files are played.

2 Press the ▲▼ buttons to select the **Disc Navigation**, and then press the **OK** or ▶ button.


CD
Disc Navigation
Disc Navigation
Programme
Setup
Photo
Music
MOVE
OK
RETURN
EXIT

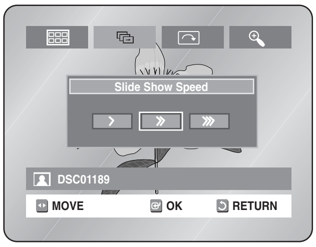
3 Press the ▲▼ buttons to select the **Photo**, and then press the **OK** or ▶ button.

4 Press the ▲▼ ◀ ▶ buttons to select a picture.

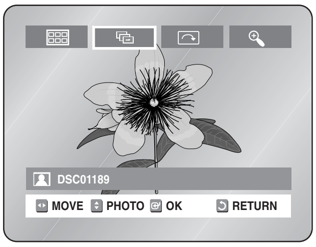

CD
Photo
Index 6 / 73
Slide Show
ROOT / DSC01189
Page 2 / 13
MOVE
OK
RETURN
EXIT

- To see the next 6 pictures, press the ►►I button.
- To see the previous 6 pictures, press the I◄◄ button.

5-1 If you press the ►I I button, the Slide show screen will appear.
Press the ◀ ▶ buttons to set the slide show speed, then press the **OK** button.


Slide Show Speed
DSC01189
MOVE
OK
RETURN

5-2 Press the ◀ ▶ buttons to select a picture file in Album screen and then press the **OK** button.

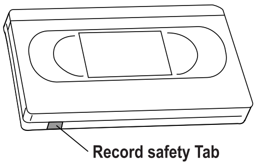

DSC01189
MOVE
PHOTO
OK
RETURN

▦ : Returns to the Album screen.
⧉ : The unit enters slide show mode.
Before the slide show can begin, the picture interval (Slide show speed) must be set.
↻ : Each time the **OK** button is pressed, the picture rotates 90 degrees clockwise.
🔍 : Each time the **OK** button is pressed, the picture is enlarged up to 4X(four times the normal size).
Normal → 2X → 4X → 2X → Normal

- Press the **QUICK** button to display menu bar.
- Press the **RETURN** button to clear the menu bar.

Playing back a VHS Tape (VCR)

To play a standard VHS tape, just insert it into the VCR deck and press the **PLAY** button. You can turn on the Auto Play to enable the VCR deck to play automatically when you insert a videotape that is missing the Record Safety Tab.



1 Insert a standard VHS tape into the VCR deck.
- When a videotape is inserted, power will turn on automatically.

2 Press the **VCR** button to select the VCR mode.

3 Press the ▶II (PLAY/PAUSE) button on the remote control or on the front panel of the unit to start playback. The videotape will begin to play automatically if the Record Safety Tab is removed and Auto Play is turned on.

4 Press the ■ (STOP) button on the remote control or on the front panel of the unit to stop playback.

Tracking

The Tracking adjustment removes the white lines that sometimes appear during playback because of slight differences in recording decks. The **PROG/TRK** (∧/∨) button will automatically align the recorded tracks with the playback heads to solve this problem.
You may also set tracking manually.

1 Adjust Tracking Manually
During playback, press the **PROG/TRK** (∧/∨) buttons to remove white lines from the picture.

Special VCR Playback Features

While a videotape is playing, you can enjoy a variety of special playback features, including Still, Frame Advance, Skip, Slow motion, and more.

Pause

In Play mode, press ▶II(**PLAY/PAUSE**) button to still a single frame.

Frame Advance

In the pause mode, press **F.ADV/SKIP** button to advance to the next frame.

FPS/RPS

In Play mode, press Forward (▶▶) button or Rewind (◀◀) button to FPS/RPS :
- Picture Search - Press and release repeatedly to advance the tape forward or backward at variable speeds.
- Jet Search - Press and hold to advance the tape forward or backward at 7 times normal speed. Upon release, it will resume normal playback.

Note

■ The forward (▶▶) button and Rewind (◀◀) button operate slightly different with front Panel buttons and remote control buttons. When the ▶▶/◀◀ button on the front panel is pressed during playback, there is only one search speed available.

Skip

In Play mode, press **F.ADV/SKIP** button to cue ahead exactly 30 seconds. Press **F.ADV/SKIP** button repeatedly up to 4 times to cue ahead 2 minutes.

Slow motion

In pause mode, press ▶▶ button for slow motion. Press the ▶▶ button repeatedly to vary slow motion speed from 1/5 to 1/30 of normal playback. Press the **PLAY** button twice to resume normal viewing.

Variable Search System

Each time you record a cassette on this DVD Recorder & VCR, an **index** is automatically marked on the tape when recording starts.The Search function allows you to fast-forward or rewind to a specific index and start playback from that point. Depending on the direction selected, the indexes are numbered as follows

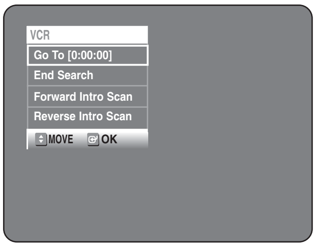
- This DVD Recorder & VCR uses a standard indexing system (VISS). As a result, it will recognize any indexes marked by other VCRs using the same system and vice versa.

Go To [0:00:00] Stop

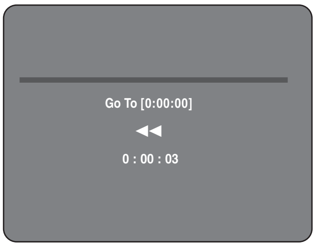
Use this feature when you want to search for the 0:00:00 counter position on a cassette.

1 Press the **CLEAR** button at the point on the tape where you want to set the counter to 0:00:00.

2 While a cassette is stopped, press the **QUICK** button.


VCR
Go To [0:00:00]
End Search
Forward Intro Scan
Reverse Intro Scan
MOVE
OK

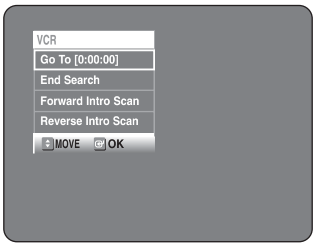
3 Press the ▲▼ buttons to select **Go To [0:00:00]**, then press the **OK** button.
The VCR will rewind or fast forward, searching for the 0:00:00 counter position, and then automatically stop at that position.


Go To [0:00:00]
◀◀
0 : 00 : 03

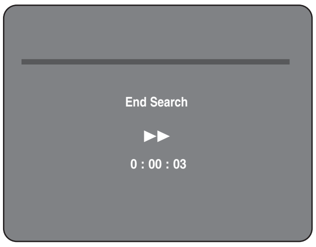
End Search

Use this feature when you want to search for a blank position to record a programme on a cassette.

1 While a cassette is stopped, press the **QUICK** button.


VCR
Go To [0:00:00]
End Search
Forward Intro Scan
Reverse Intro Scan
MOVE
OK

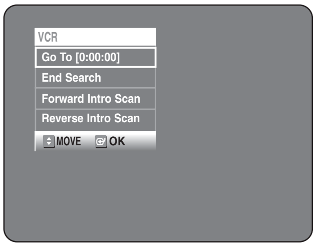
2 Press the ▲▼ buttons to select **End Search**, then press the **OK** button.
The VCR will fast forward, searching for a blank position, and then automatically stop at that position. If the VCR reaches the end of the tape during end search, the tape will be ejected.


End Search
▶▶
0 : 00 : 03

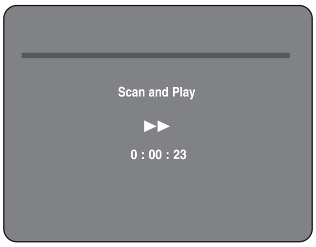
Forward/Backward Intro Scan

Use scan and play when you don’t know exactly where a programme is located on a cassette tape.

1 While a cassette is stopped, press the **QUICK** button.


VCR
Go To [0:00:00]
End Search
Forward Intro Scan
Reverse Intro Scan
MOVE
OK

2 Press the ▲▼ buttons to select **Forward Intro Scan** or **Reverse Intro Scan**, then press the **OK** button. When an Index mark is found the DVD Recorder & VCR will playback the tape for 5 seconds, after which it will continue searching for the next Index mark.


Scan and Play
▶▶
0 : 00 : 23

Recording

This section shows various DVD recording methods.

◆ *DVD Recording*
- *Before Recording 57*
- *Recording the current Programme you are watching 59*
- *Recording From External Devices 60*
- *Watching the Images Being Recorded (Time Slip) 60*
- *Making a One Touch Recording(OTR) 61*
- *Making a Timer Recording 61*
- *Editing the Scheduled Record List 63*
- *Deleting the Scheduled Record List 64*
- *Using the Video Plus+ Feature 65*
- *Video Plus+ Extended 66*

◆ *VCR Recording*
- *Basic VCR Recording 66*
- *Check Remaining Time 67*
- *Special Recording Features 67*
- *Copy to DVD or VCR 68*

Before Recording

This unit can record on various types of discs. Before recording, read the following instructions and select the disc type according to your preference.

Recordable discs

This recorder can record on the following discs.

DVD-RAM	DVD-RW	DVD-R
DVD RAM	DVD RW	DVD R

•DVD-RWs and DVD-RAMs are rewritable.
•DVD-Rs are non-rewritable.

Compatibility between Toshiba and Other Company's Recorder.

Disc Types	Recording format	Recording Device	Finalising	Additional Recording in Toshiba Recorder
DVD-RAM	VR Mode	Toshiba	X	Recordable
		Other Company	X	Recordable
DVD-RW	VR Mode	Toshiba	finalised	Not recordable
			not finalised	Recordable
		Other Company	finalised	Not recordable
			not finalised	Recordable
	V Mode	Toshiba	finalised	Not recordable
			not finalised	Recordable
		Other Company	finalised	Not recordable
			not finalised	Not recordable
DVD-R	V Mode	Toshiba	finalised	Not recordable
			not finalised	Recordable
		Other Company	finalised	Not recordable
			not finalised	Not recordable

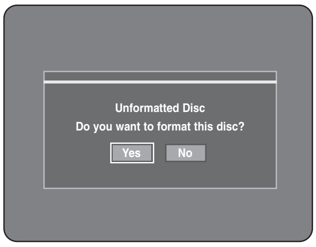
Note

■ Finalise
- This closes the DVD-RW/-R so no additional recording can be done.

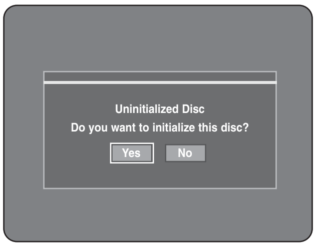
■ Unfinalise
- This allows additional recording on a DVD-RW disc originally recorded on the DVD Recorder & VCR
  - A DVD-RW disc that has been recorded by DAO(Disc At Once) in a PC cannot be unfinalised.
  - A DVD-RW disc that has been recorded in V Mode of a different maker's recorder cannot be unfinalised.
  - A DVD-R disc cannot be unfinalised.

Recording Formats

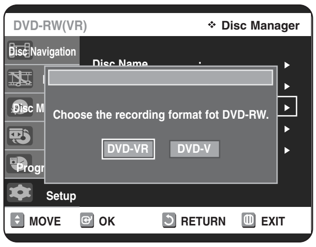
Since available functions differ depending on the disc type, select a disc that best fits your preferences.
When you insert an unused disc, the following message appears.
DVD-RAM: Use after formatting the disc.


Unformatted Disc
Do you want to format this disc?

DVD-RW: When an unused DVD-RW disc is first inserted, the message "Do you want to intialize this disc" will be displayed. If you select Yes, the disc will be formatted in VR mode.


Uninitialized Disc
Do you want to initialize this disc?

If you want to change the mode, refer to Formatting a Disc on page 85.


Choose the recording format fot DVD-RW.

DVD-R: Formatting DVD is unnecessary and only V mode Recording is supported.

DVD-RW (V mode)/-R

- Chapters will be created automatically when you finalise recording on DVD-RW/-R discs in V mode with the Chapter Creator has been set to On.
- Simple editing (erasing titles/changing title name).

DVD-RW (VR mode)/-R

- This mode involves multiple editing functions (such as deletion of the whole title, partial deletion of a title, etc.).
- Various editing options using a created Playlist.

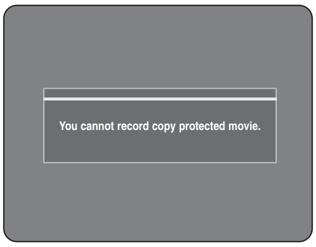
Recording Mode

Select one of four recording modes by pressing the **REC SPEED** button repeatedly while the unit is in Stop mode for the desired recording time and picture quality. In general, picture quality improves as the recording time decreases.
In AUTO Mode, the most suitable record mode is adjusted automatically, according to remaining time on the disc and length of the timer recording.
This function is selected only one mode in XP, SP, LP and EP modes and you can use this mode for timer recording.

Mode	Characteristic	Recording Times Data Rates
XP (high quality mode)	Select when the video quality is important.	Approx. 1 hours about 8 Mbps
SP (standard quality mode)	Select to record in standard quality.	Approx. 2 hours about 4 Mbps
LP (long recording mode)	Select when a long recording time is required.	Approx. 4 hours about 2 Mbps
EP (extended mode)	Select when a long recording time is required.	Approx. 6 hours/ about 1.2 Mbps Approx. 8 hours/ about 0.8 Mbps
AUTO	for timer recording only see page 62.	Approx 60 to 480 Min Approx 0.8 to 8Mbps

Unrecordable video

Pictures with copy protection cannot be recorded on this DVD Recorder & VCR.
When the DVD Recorder & VCR receives a copy guard signal while recording, recording stops and the following message appears on the screen.


You cannot record copy protected movie.

Concerning Copy Control Signals

TV broadcasts that contain copy control signals may have one of the following three signal types, Copy-Free, Copy-Once and Copy-Never. If you want to record a copy-once type programme, use DVD-RW with CPRM in VR Mode and DVD-RAM.

	Copy-Free	Copy-Once	Copy-Never
DVD-RW(Ver.1.1)	O	-	-
DVD-RW(Ver.1.1) with CPRM			
VR mode	O	O*	-
V mode	O		-
DVD-R	O	-	-
DVD-RAM(Ver.2.0)	O	O*	-

Once **Copy Once** has been recorded, additional recording cannot be performed.

This * marked parts are compatible with CPRM.

- Content Protection for Recordable Media (CPRM)

CPRM is a mechanism that ties a recording to the media on which it is recorded. It is supported by some DVD recorders, but not by many DVD players.
Each blank recordable DVD has a unique 64-bit media ID etched in the BCA. When protected content is recorded onto the disc, it can be encrypted with a 56-bit C2 (Cryptomeria) cipher derived from the media ID. During playback, the ID is read from the BCA and used to generate a key to decrypt the contents of the disc.
If the contents of the disc are copied to other media, the ID will be absent or wrong and the data will not be decryptable.

Recording the current programme you are watching

DVD-RAM DVD-RW DVD-R VHS

1. Check the antenna cable is connected.
2. Check the remaining time on the disc.

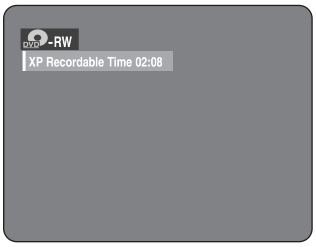
DVD-RAM/-RW discs should be formatted in advance before beginning recording. Most new discs are sold unformatted. Make sure to format your unformatted discs before recording.

1 Press the **OPEN/CLOSE** button and place a recordable disc on the disc tray.

2 Press the **OPEN/CLOSE** button to close the disc tray.
Wait until **LOAD** disappears from the front panel display.

3 Press the **PROG/TRK** (∧/∨) buttons or number buttons to select the programme you want to record.

4 Press the **REC SPEED** button repeatedly, to select the recording speed (quality).
- XP (High, approx. 1 hour) → SP (Standard, approx. 2 hours) → LP (Low, approx. 4 hours) → EP (Extended Play, approx. 6hours/8hours)



DVD -RW

XP Recordable Time 02:08

5 Press the **REC** button.
- "●" is displayed on the screen and recording begins.

6 Press the **STOP** button to stop or finish a recording in progress.
- The message "Updating the information of disc. Please wait for a moment" is displayed.

Pausing / Resuming

- Press the **REC PAUSE** button to pause a recording in progress.
- Press the **REC PAUSE** button again during pause to resume recording.
- You can switch channels by pressing the **PROG/TRK** (∧/∨) buttons while recording pauses.

Note

- You can not change the recording mode and the programme while recording.
- Recording will stop automatically if there is no free space left for recording.
- Up to 99 titles can be recorded onto a disc.
- If the power interrupted due to power failure or other reasons, the title being recorded will not be saved onto the disc.
- Recording will stop automatically if a copy protected image is selected.
- Do not use DVD-R authoring discs with this unit.

Recording From External Devices

Follow these directions to record onto a disc or a tape from External Devices.

1 Connect the output jack of your External Devices to the SCART input connector by SCART cable or AUX on the front by Audio/Video Cable.

2 Power on your DVD Recorder & VCR and switch to AV mode by pressing the **INPUT SEL** button on the remote control. The front panel display changes in the following sequence

→ PR → AV1 → AV2 → AUX

3 Press the **REC SPEED** button repeatedly to select the recording speed(quality).

→ SP → LP → EP → XP

4 When your DVD Recorder & VCR is in the stop mode, set the operation mode of your External Devices to play mode.

5 Press the **REC** button on your DVD Recorder & VCR when the image from which you want to start recording is displayed.

6 Press the **STOP** button on your DVD Recorder & VCR when the recording is finished.

Note

- ■ Also refer to the user manual for your External Devices when recording through Audio/Video or Scart input.

Watching the Images Being Recorded (Time Slip)

DVD-RAM

This function allows you to watch the recently recorded images on the screen while a recording is in progress, with a 10 second delay.

1 Press the ● (REC) button on the remote control.

- Wait 10 seconds and press the **TIME SLIP** button.
- The recently recorded images are played back on the screen, with a 10 second delay.
- On the TIME SLIP screen, you can playback, scan, or perform other operations for the recorded program using the playback related buttons.
  Press the ◀◀ button to scan the recording in the reverse order, from the end to the start.
  Press the ▶▶ button to scan to the recently recorded 10- second images.

2 Press the ■ (STOP) button once to clear the TIME SLIP function.

- To stop a recording while a TIME SLIP function is in progress, press the ■ (STOP) button twice.

Note

- ■ The Time Slip feature only works with DVD-RAM discs.
- ■ Time Slip function - Pause TV operation
  To enable Pause TV while watching a live programme on the DVD Recorder proceed as follows:
  1) Ensure DVD-RAM disc is inserted.
  2) Press Record ● (REC) button.
  3) Allow recording to continue for 10 seconds.
  4) Press 'TIME SLIP' button.
  5) Press Play/Pause button.
  6) When desired, press Play/Pause button once more to commence playback and view the recorded programme on the screen from the original Pause position.

Making a One Touch Recording (OTR)

DVD-RAM DVD-RW DVD-R VHS

One-Touch Recording (OTR) allows you to add recording time from 30 minutes up to 9 hours by pressing the **REC** button:

- 30-minute increment up to 4 hours
- 1-hour increment from the 4th hour to 9 hours

1 Press the **PROG/TRK** (∧ / ∨) buttons or number buttons to select the programme to record. If you want to record through a connected external component, press the **INPUT SEL.** button to select an appropriate external input(AV1. AV2, or AUX).

2 Press the **REC** button.

3 While in Record mode, press the **REC** button again to activate One-Touch Recording (OTR).
- Record length 0:30 appears on the On-Screen Display and the DVD Recorder & VCR will record for exactly 30 minutes.

4 Continue pressing **REC** to add recording time from 30 minutes to 9 hours.
- The DVD Recorder & VCR stops recording automatically when the time has elapsed.

To stop recording

Press the **STOP** (■) button.
The message “Press **STOP** button once more to cancel Timer Record” is displayed.
Press the **STOP** (■) button again.
The message “Updating the Information of disc. Please wait for a moment” is displayed.

Note

- The timer counter decreases by minute to 0:00, then the DVD Recorder & VCR stops recording.

Making a Timer Recording

DVD-RAM DVD-RW DVD-R VHS

1. Check the antenna cable is connected.
2. Check the remaining time of the disc.
3. Check the date and time are correct.

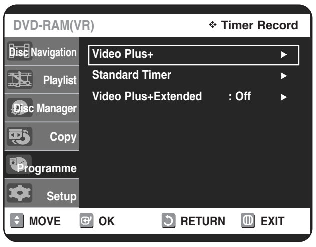
Make sure the Clock (Setup-Clock Set) must be set before you proceed with a timer recording.
(See page 25)

1 Press the **OPEN/CLOSE** button, and place a recordable disc on the disc tray.

2 Press the **OPEN/CLOSE** button to close the disc tray. Wait until **LOAD** disappears from the front panel display.

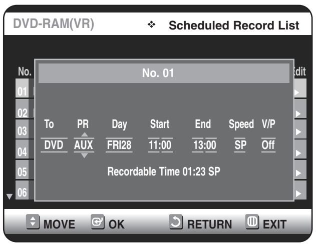
3 With the unit in Stop mode, press the **MENU** button.

4 Press the ▲▼ buttons to select **Programme**, then press the **OK** or ▶ button.



Video Plus+Extended : Off ▶

5 Press the ▲▼ buttons to select the **Standard Timer**, then press the **OK** or ▶ button twice.
- The Timer Recording screen is displayed.



No. 01

To	PR	Day	Start	End	Speed	V/P
DVD	AUX	FRI28	11:00	13:00	SP	Off

Recordable Time 01:23 SP

6 Fill in the items using the ▲▼◀ ▶ buttons.
◀ ▶ : Moves to the previous/next item,
▲▼ : Sets a value.

- **To** : Select the media to record DVD or VCR.
- **PR** : The video input source (AV1, AV2 or AUX), or the broadcasting channel you want to make a timer recording from.
- **Day** : Set the recording day.
  Daily, MO-SA, MO-FR, W-SA, ...W-SU, MON01, ...WED31
- **Start/End Time** : Start and end time of the timer recording.

• Recording Speed (DVD)

AUTO : Select when you want to set video quality automatically. In AUTO Mode, the most suitable record mode is adjusted automatically, according to remaining time on the disc and length of the timer recording. This function is selected only one mode in XP, SP, LP and EP modes and you can use this mode for timer recording.
XP (high quality) : Select when audio and video qualities are important. (Approx. 1 hour)
SP (standard quality) : Select to record in standard quality. (Approx. 2 hours)
LP (low quality) : Select when a long recording time is required. (Approx. 4 hours)
EP (extended mode) : Select when a longer recording time is required. (Approx.6 hours at 1.2Mbps or Approx. 8 hours at 0.8 Mbps.)

• Recording Speed (VCR)

AUTO : Select when you want to set video quality automatically. It depends on remaining time of VCR tape.
SP : Standard Play, for best picture quality.
LP : Long Play, for maximum recording time (3 times SP).

• V/P(VPS/PDC)

VPS : Video Programme System

PDC : Programme Delivery Control
- Do not select V/P unless you are sure the programme you wish to record is broadcast with VPS/PDC. If you do set V/P to On, then you must set up the start-time EXACTLY according to the published TV schedule. Otherwise the timer recording will not operate.

Note

■ When you are recording at EP mode on a DVD-RW (V mode)/-R disc, it may not record the full 6 or 8 hours because the unit uses the VBR(Variable Bit Rate) ENCODING system. For example, if you record a programme with a lot of action, it uses a higher bit rate which in turn consumes more disc memory.

7 Press the **OK** button.

If the timer settings overlap
The programmes are recorded in order of priority. If timer recording is set for the first programme and then again for the second programme and both programmes overlap, the following message will appear on the screen: “This setting is identical with 1” The message shows that the first programme has priority. After recording of the first programme is complete, the second programme starts being recorded.

To exit without saving the current setting
Press the **MENU** or **RETURN** button.

To return to the previous menu
Press the **RETURN** button if you don’t want to set a timer recording.

8 Turn the power off to finish the timer recording.
- ◷ will blink if disc or tape is not inserted.
- ◷ will appear on the front panel. It means that a timer recording is registered.

Note

■ The timer recording time may differ from the set time depending on disc status and overall timer recording status (for example, recording times overlapping, or when the previous recording ends within 3 minutes before the start time of the next recording.)

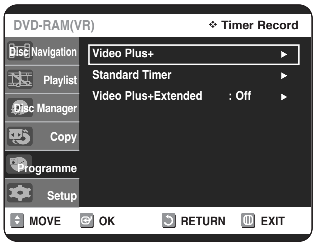
Editing the Scheduled Record List

DVD-RAM DVD-RW DVD-R VHS

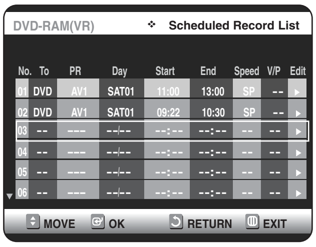
Follow these directions to edit the timer record list.

1 With the unit in Stop mode, press the **MENU** button.

2 Press the ▲▼ button to select **Programme**, then press the **OK** or ▶ button.

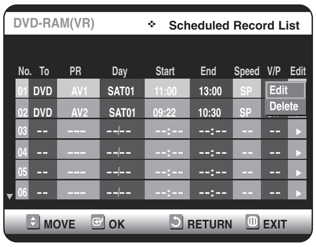

DVD-RAM(VR)
❖ Timer Record
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Video Plus+
Standard Timer
Video Plus+Extended : Off
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ button to select **Standard Timer**, then press the **OK** or ▶ button.


DVD-RAM(VR)
❖ Scheduled Record List
MOVE
OK
RETURN
EXIT

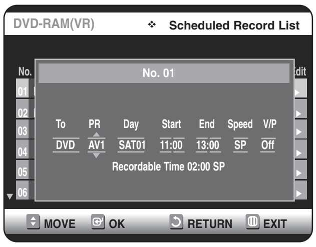
No.	To	PR	Day	Start	End	Speed	V/P	Edit
01	DVD	AV1	SAT01	11:00	13:00	SP	--	▶
02	DVD	AV1	SAT01	09:22	10:30	SP	--	▶
03	--	---	--/--	--:--	--:--	--	--	▶
04	--	---	--/--	--:--	--:--	--	--	▶
05	--	---	--/--	--:--	--:--	--	--	▶
06	--	---	--/--	--:--	--:--	--	--	▶

4 Press the ▲▼ button to select the number of the scheduled record list you want to edit, then press the **OK** or ▶ button.
- The Edit and Delete items are displayed.


DVD-RAM(VR)
❖ Scheduled Record List
MOVE
OK
RETURN
EXIT

No.	To	PR	Day	Start	End	Speed	V/P	Edit
01	DVD	AV1	SAT01	11:00	13:00	SP		Edit
02	DVD	AV2	SAT01	09:22	10:30	SP		Delete
03	--	---	--/--	--:--	--:--	--	--	▶
04	--	---	--/--	--:--	--:--	--	--	▶
05	--	---	--/--	--:--	--:--	--	--	▶
06	--	---	--/--	--:--	--:--	--	--	▶

5 Press the ▲▼ button to select **Edit**, then press the **OK** or ▶ button.
- The Timer Recording screen is displayed.
  Edit the items you want to modify.
  See the Timer Recording section for more information on Timer Recording Input items.
  (See page 62)


DVD-RAM(VR)
❖ Scheduled Record List
No. 01
MOVE
OK
RETURN
EXIT

To	PR	Day	Start	End	Speed	V/P
DVD	AV1	SAT01	11:00	13:00	SP	Off

Recordable Time 02:00 SP

6 Press the **OK** button to confirm the edited setting.

7 Press the **MENU** button after finishing the operation. The menu screen will disappear.

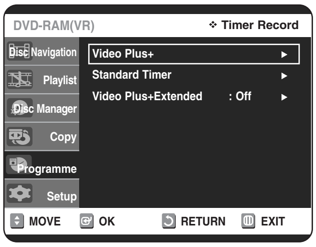
Deleting the Scheduled Record List

DVD-RAM DVD-RW DVD-R VHS

Follow these directions to delete a title from the timer record list.

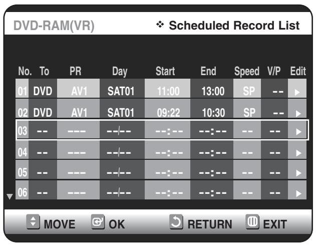
1 With the unit in Stop mode, press the **MENU** button.

2 Press the ▲▼ button to select **Programme**, then press the **OK** or ▶ button.


DVD-RAM(VR)
❖ Timer Record
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Video Plus+
Standard Timer
MOVE
OK
RETURN
EXIT

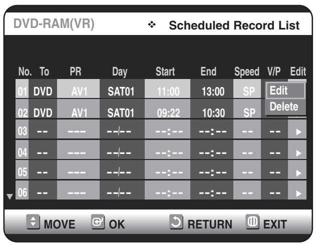
Video Plus+Extended : Off

3 Press the ▲▼ button to select **Standard Timer**, then press the **OK** or ▶ button.


DVD-RAM(VR)
❖ Scheduled Record List
MOVE
OK
RETURN
EXIT

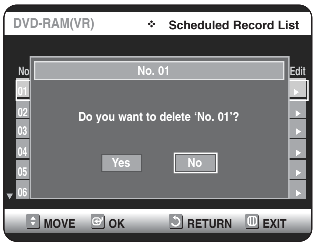
No.	To	PR	Day	Start	End	Speed	V/P	Edit
01	DVD	AV1	SAT01	11:00	13:00	SP	--	▶
02	DVD	AV1	SAT01	09:22	10:30	SP	--	▶
03	--	---	--/--	--:--	--:--	--	--	▶
04	--	---	--/--	--:--	--:--	--	--	▶
05	--	---	--/--	--:--	--:--	--	--	▶
06	--	---	--/--	--:--	--:--	--	--	▶

4 Press the ▲▼ button to select the number of the scheduled record list you want to delete, and then press the **OK** button.
- The Edit and Delete items are displayed.


DVD-RAM(VR)
❖ Scheduled Record List
Edit
Delete
MOVE
OK
RETURN
EXIT

No.	To	PR	Day	Start	End	Speed	V/P	Edit
01	DVD	AV1	SAT01	11:00	13:00	SP		
02	DVD	AV1	SAT01	09:22	10:30	SP		
03	--	---	--/--	--:--	--:--	--	--	▶
04	--	---	--/--	--:--	--:--	--	--	▶
05	--	---	--/--	--:--	--:--	--	--	▶
06	--	---	--/--	--:--	--:--	--	--	▶

5 Press the ▲▼ button to select **Delete**, then press the **OK** or ▶ button.
- You will be prompted with the delete confirm message such as “Do you want to delete ‘No.01’?”.


DVD-RAM(VR)
❖ Scheduled Record List
Yes
No
MOVE
OK
RETURN
EXIT

No. 01

Do you want to delete ‘No. 01’?

6 Press the ◀ ▶ buttons to select **Yes**, then press the **OK** button.
- The selected title will be deleted from the list.

7 Press the **MENU** button after finishing the operation.
The menu screen will disappear.

Note
- You can not delete programmes that are currently recording.

Using the Video Plus+ Feature

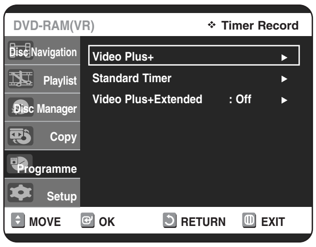
DVD-RAM DVD-RW DVD-R VHS

Before presetting your DVD Recorder & VCR:
- Switch on both the television and your DVD Recorder & VCR.
- Check that the date and time are correct.

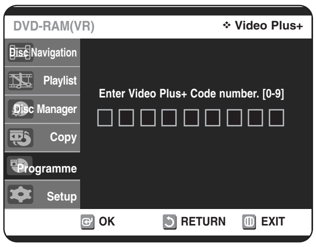
Up to twelve programmes can be preset.

1 With the unit in Stop mode, press the **MENU** button.

2 Press the ▲▼ button to select **Programme**, then press the **OK** or ▶ button.


DVD-RAM(VR)
❖ Timer Record
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Video Plus+ ▶
Standard Timer ▶
Video Plus+Extended : Off ▶
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Video Plus+**, then press the **OK** or ▶ button.
- A message is displayed to allow you to enter the Video Plus+ code.

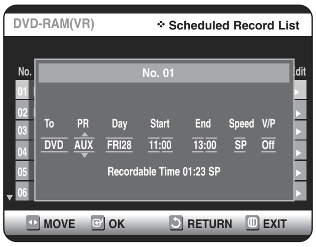

DVD-RAM(VR)
❖ Video Plus+
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
OK
RETURN
EXIT

Enter Video Plus+ Code number. [0-9]

☐☐☐☐☐☐☐☐☐

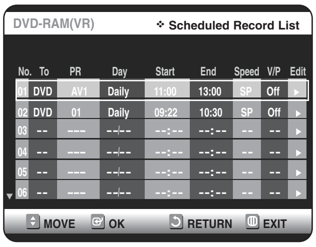
4 Press the number buttons to enter the code of the programme that you want to record in your television magazine.
- If you want to correct the Video Plus+ code that you are entering:
- Press the ◀ button until the digit to be corrected is cleared.
- Enter the correct digit.

5 Press the **OK** button.
- The information concerning the programme is displayed.
- When using the Video Plus+ function for the first time with stored stations, the programme number flashes. This one time, you must enter the PR number manually by pressing the ▲▼ buttons or number buttons.


DVD-RAM(VR)
❖ Scheduled Record List
No. 01
MOVE
OK
RETURN
EXIT

To	PR	Day	Start	End	Speed	V/P
DVD	AUX	FRI28	11:00	13:00	SP	Off

Recordable Time 01:23 SP


DVD-RAM(VR)
❖ Scheduled Record List
MOVE
OK
RETURN
EXIT

No.	To	PR	Day	Start	End	Speed	V/P	Edit
01	DVD	AV1	Daily	11:00	13:00	SP	Off	▶
02	DVD	01	Daily	09:22	10:30	SP	Off	▶
03	--	---	--/--	--:--	--:--	--	--	▶
04	--	---	--/--	--:--	--:--	--	--	▶
05	--	---	--/--	--:--	--:--	--	--	▶
06	--	---	--/--	--:--	--:--	--	--	▶

6 If the programme and times are correct, press the **OK** button.

7 Turn the power off by pressing the **ON/STANDBY** button to activate the timer recoding setting.

8 Refer to pages 63~64 if you want to:
- Check whether the timer Recording has set correctly or not.
- Cancel a preset recording.

Note

- The numbers next to each TV programme listing in the magazines or newspapers are Video Plus+ code numbers, which allow you to programme your DVD Recorder & VCR instantly with the remote control. Enter the Video Plus+ code for the programme you wish to record.
- Video Plus+ is a trademark of Gemstar Development Corporation. The Video Plus+ system is manufactured under licence from Gemstar Development Corporation.

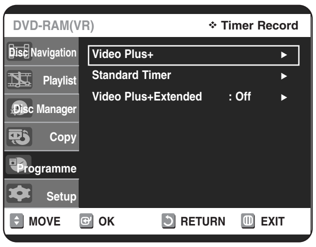
Video Plus+ Extended

To prevent delays or over-runs the DVD Recorder & VCR has a function called Video Plus+ Extended allowing you to extended the recording time by up to 60 minutes.

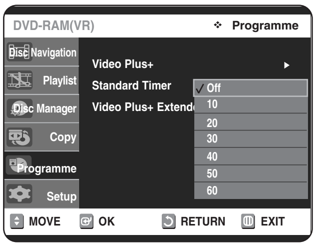
- Only use if PDC is not available or set to OFF.

1 With the unit in Stop mode, press the **MENU** button.

2 Press the ▲▼ buttons to select **Programme**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Timer Record
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Video Plus+
Standard Timer
Video Plus+Extended : Off
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Video Plus+ Extended**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Programme
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Video Plus+
Standard Timer
Video Plus+ Extend
✓ Off
10
20
30
40
50
60
MOVE
OK
RETURN
EXIT

4 Press the ▲▼ buttons to select the Video Plus+ Extended time, then the press **OK** or ▶ button.

5 Press the **MENU** button to exit the menu.

Basic VCR Recording

Before starting
1. Check TV channel and Antenna connections.
2. Check the remaining time on the tape.

You can record a TV show in progress by inserting a blank tape and pressing the ●(**REC**) button. You can even add recording time from 30 minutes up to 9 hours by pressing the ●(**REC**)button repeatedly.

Note
- Be sure your videotape has a Record Safety Tab. If the tab is missing, you can cover the opening with a small piece of tape.

CAUTION
- Warning: Do not cover this opening unless you are sure you want to record over the tape.

1 Insert a blank VHS tape into the VCR deck.
- Make sure the tape is long enough to record the entire programme.

2 Press **VCR** button to select the VCR mode.

3 Press the **0–9** buttons or the **PROG/TRK** (∧/∨) buttons to select the desired channel.
Press the **INPUT SEL.** button to select AV1, AV2 or AUX if recording from an external device connected to the front or rear inputs, respectively.

4 Press the **REC SPEED** button on the remote control to set the Record Speed to one of the following options:
- **SP** – Standard Play, for best picture quality.
- **LP** – Long Play, for maximum recording time (3 times SP).

Note
- The selected Record Speed will appear on the front panel display and on-screen display.

Maximum Recording Time - SP vs. LP

Tape Length	Recording Time (in SP)
E180	180 mins or 3 hours
E240	240 mins or 4 hours
E280	280 mins or 4 hours and 40mins
E300	300 mins or 5 hours

Note

- When you watch or record on the VCR during DVD Recording, some function buttons may not operate. The message “This function is not available.” will be displayed.

4 Press the ●(**REC**) button on the remote control or front panel.
For options while recording is in progress, see “Special Recording Features”.

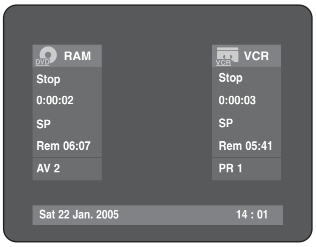
5 Press the **STOP** button to stop or finish a recording in progress.

Pausing / Resuming

- Press the **REC PAUSE** button to pause a recording in progress.
- Press the **REC PAUSE** button again during pause to resume recording.
- You can switch programme by pressing the **PROG/TRK** (∧/∨) buttons while recording pauses.

Check Remaining Time

1 Press **DISPLAY** button on the remote control. Following information will be displayed.
(Current deck status, recording speed, remaining time, input mode, current time.)



RAM
Stop
0:00:02
SP
Rem 06:07
AV 2

VCR
Stop
0:00:03
SP
Rem 05:41
PR 1

Sat 22 Jan. 2005 14 : 01

Special Recording Features

While a recording is in progress, you can watch a different channel, watch a different media, or add recording time. (see page 61)

1 Watch a Different Channel

When you watching through the Antenna input during recording, press the TV/VCR button on the remote control. Change the programme you want to watch.
When you watching through AV input during recording, change the input of your TV from AV to Antenna. Change the programme you want to watch.

2 Watch a different media during recording

You can watch a DVD during VCR recording or watch a Video tape during DVD recording.

- During VCR recording, insert a DVD in the DVD deck. The output will automatically change to the DVD and start playback.
- During DVD recording, insert a Video tape in the VCR deck. The output will automatically change to the VCR and start playback. (Only if tape is missing the safety tab)

3 Add Recording Time

Refer to the One-Touch Recording (OTR).
(See page 61)

4 Recording DVD and VCR at the same time

You can record DVD and VCR at the same time, but both modes must be set up to record separately.

- Press the **DVD** or **VCR** button to set the unit to DVD or VCR mode respectively.
- Choose input mode (PR, AV1, AV2 or AUX) for DVD or VCR.
- Choose REC SPEED for DVD or VCR.
- Press **REC** button for DVD or VCR.

Note

- When DVD Recorder & VCR is connected to your TV using S-Video or component video cable, the playback screen on the video tape will not display during DVD recording.
- You cannot record different channels at the same time, however you can record from different input source at the same time.
- The DVD and VCR cannot start recording at the exact same time. You must set one mode to start recording, then the other.

Copy to DVD or VCR

DVD-RAM DVD-RW DVD-R VHS

You can copy from the DVD to VCR or VCR to DVD.
Check the remaining time on the tape.

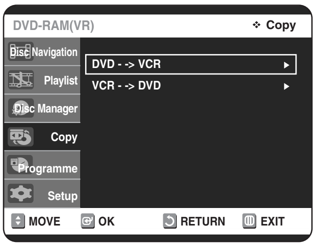
To copy from DVD to VCR

DVD-RAM DVD-RW

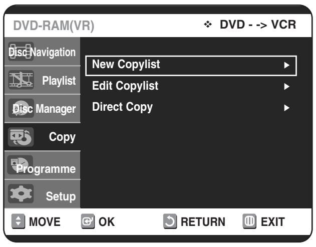
(VR mode)

1 With the unit in Stop mode, press the **MENU** button.

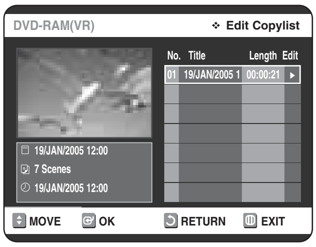
2 Press the ▲▼ buttons to select **Copy**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Copy
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
DVD - -> VCR ▶
VCR - -> DVD ▶
MOVE
OK
RETURN
EXIT

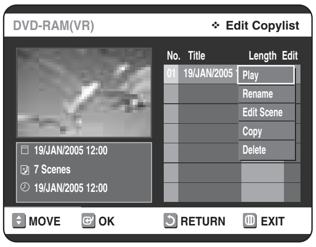
3 Press the ▲▼ buttons to select **DVD → VCR**, then press the **OK** or ▶ button.


DVD-RAM(VR)
DVD - -> VCR
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
New Copylist ▶
Edit Copylist ▶
Direct Copy ▶
MOVE
OK
RETURN
EXIT

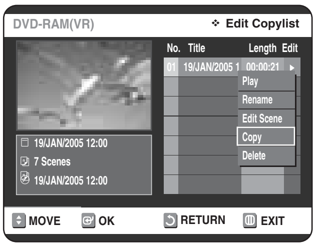
4 Press the ▲▼ buttons to select **Edit Copylist**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Edit Copylist
No. Title Length Edit
01 19/JAN/2005 1 00:00:21 ▶
19/JAN/2005 12:00
7 Scenes
19/JAN/2005 12:00
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select desired copylist, then press the **OK** or ▶ button.


DVD-RAM(VR)
Edit Copylist
No. Title Length Edit
01 19/JAN/2005
Play
Rename
Edit Scene
Copy
Delete
19/JAN/2005 12:00
7 Scenes
19/JAN/2005 12:00
MOVE
OK
RETURN
EXIT

6 Press the ▲▼ buttons to select **Copy**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Edit Copylist
No. Title Length Edit
01 19/JAN/2005 1 00:00:21 ▶
Play
Rename
Edit Scene
Copy
Delete
19/JAN/2005 12:00
7 Scenes
19/JAN/2005 12:00
MOVE
OK
RETURN
EXIT

Direct copy DVD to VCR

- Insert a DVD disc you want to copy.
- Insert a VHS tape.
- Press the VCR copy button on the remote control or TO VCR button on the front panel.
- To stop recording, press the **STOP** button.

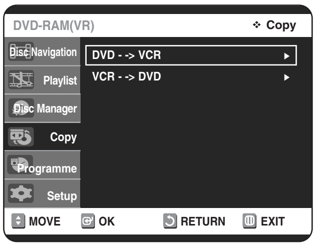
Note

- If you want to make a new Copylist and copy this scene directly from the Edit Copylist, select the New Copylist and make scene. This is the same function as creating the New Playlist (See page 76).

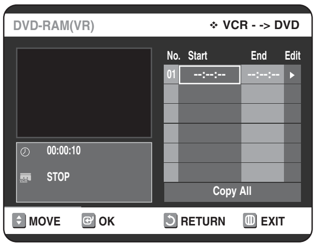
To copy from VCR to DVD

1 With the unit in Stop mode, press the **MENU** button in stop mode.

2 Press the ▲▼ buttons to select **Copy**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Copy
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
DVD - -> VCR ▶
VCR - -> DVD ▶
MOVE
OK
RETURN
EXIT

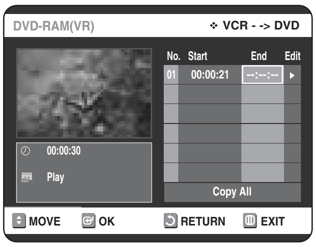
3 Press the ▲▼ buttons to select **VCR-->DVD**, then press the **OK** or ▶ button.


DVD-RAM(VR)
VCR - -> DVD
Copy All
MOVE
OK
RETURN
EXIT

No.	Start	End	Edit
01	--:--:--	--:--:--	▶

00:00:10
STOP

4 You can use the ▶II, I◀◀ or ▶▶I , ◀◀ or ▶▶ buttons to search for the Start position.
Press the **OK** button at the start point.

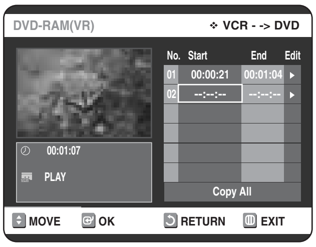

DVD-RAM(VR)
VCR - -> DVD
Copy All
MOVE
OK
RETURN
EXIT

No.	Start	End	Edit
01	00:00:21	--:--:--	▶

00:00:30
Play

5 You can use the ▶II, I◀◀ or ▶▶I , ◀◀ or ▶▶ buttons to search for the end position.
Press the **OK** button at the end point.

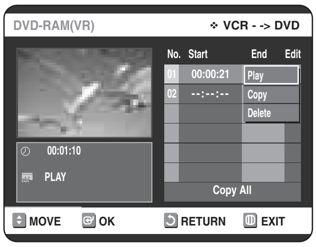
- A copylist will be generated.
  Repeat the above steps to create the copylist.
- In VCR mode, the copylist cannot be saved.


DVD-RAM(VR)
VCR - -> DVD
Copy All
MOVE
OK
RETURN
EXIT

No.	Start	End	Edit
01	00:00:21	00:01:04	▶
02	--:--:--	--:--:--	▶

00:01:07
PLAY

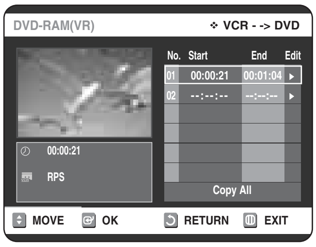
6 Press the ▲▼ buttons to select desired copylist, then press the **OK** or ▶ button.


DVD-RAM(VR)
VCR - -> DVD
Play
Copy
Delete
Copy All
MOVE
OK
RETURN
EXIT

No.	Start	End	Edit
01	00:00:21		
02	--:--:--		

00:01:10
PLAY

7 Press the ▲▼ buttons to select **Copy**, then press the **OK** or ▶ button.


DVD-RAM(VR)
VCR - -> DVD
Copy All
MOVE
OK
RETURN
EXIT

No.	Start	End	Edit
01	00:00:21	00:01:04	▶
02	--:--:--	--:--:--	▶

00:00:21
RPS

- The VCR will fast forward, searching for a start position and then automatically start a copy.
- It may not be match up with Start and END point exactly.
- If you want to copy all copylists, select **Copy All**.

Direct copy VCR to DVD

- Insert the VHS tape you want to copy.
- Insert Recordable DVD disc.
- Press DVD copy button on the remote control or TO DVD button on the front panel.
- To stop recording press the **STOP** button.

Editing

This section introduces basic functions of DVD editing and explains both edit functions for the recording on a disc and edit functions for the entire disc.

- *Playing the Title List 70*
- *Basic Editing (Title List) 72*
- *Advanced Editing (Playlist) 76*
- *Disc Manager 84*

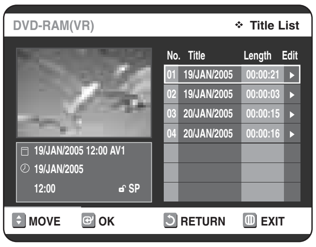
Playing the Title List

DVD-RAM DVD-RW DVD-R

Follow these instructions to play back a scene from the Title List.

Using the TITLE LIST button

1 Press the **TITLE LIST** button.
The Title List screen is displayed.


DVD-RAM(VR)
❖ Title List
19/JAN/2005 12:00 AV1
19/JAN/2005
12:00
SP
MOVE
OK
RETURN
EXIT

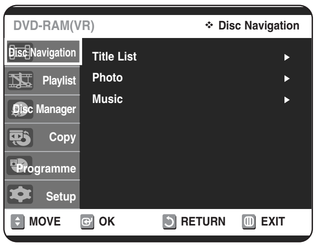
No.	Title	Length	Edit
01	19/JAN/2005	00:00:21	▶
02	19/JAN/2005	00:00:03	▶
03	20/JAN/2005	00:00:15	▶
04	20/JAN/2005	00:00:16	▶

2 Press the ▲▼ buttons to select a title you want to play from Title List, and then press the **PLAY** button.
The selected title will be played back.

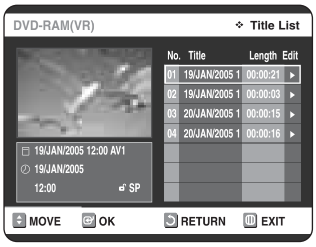
3 To stop title play, press the **STOP** button.
To return the title list screen, press the **TITLE LIST** button.

Using the MENU button

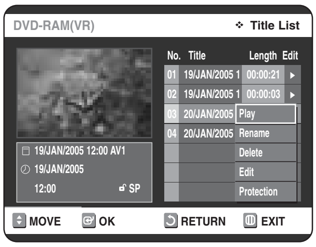
1 Press the **MENU** button.


DVD-RAM(VR)
❖ Disc Navigation
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Title List ▶
Photo ▶
Music ▶
MOVE
OK
RETURN
EXIT

2 Press the ▲▼ buttons to select **Disc Navigation**, then press the **OK** or ▶ button twice.
The Title List screen is displayed.


DVD-RAM(VR)
Title List
No. Title Length Edit
01 19/JAN/2005 1 00:00:21
02 19/JAN/2005 1 00:00:03
03 20/JAN/2005 1 00:00:15
04 20/JAN/2005 1 00:00:16
19/JAN/2005 12:00 AV1
19/JAN/2005
12:00 SP
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Title**, then press the **OK** or ▶ button.
The Edit menu is displayed:Play, Rename, Delete, Edit, Protection (See pages 72~75)


DVD-RAM(VR)
Title List
No. Title Length Edit
01 19/JAN/2005 1 00:00:21
02 19/JAN/2005 1 00:00:03
03 20/JAN/2005 Play
04 20/JAN/2005 Rename
Delete
Edit
Protection
19/JAN/2005 12:00 AV1
19/JAN/2005
12:00 SP
MOVE
OK
RETURN
EXIT

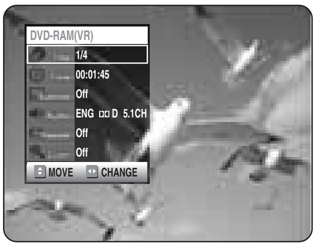
4 Press the ▲▼ buttons to select **Play** to play the title list, then press the **OK** button.
The selected title will be played back.

RAM
VR
▶Play
SP

5 Press the **STOP** button to stop playing.
To return the title list screen, press the **TITLE LIST** button.

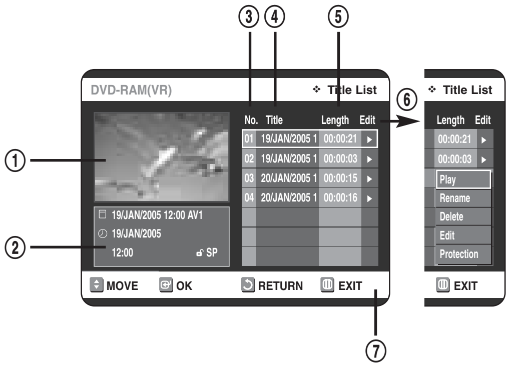
Note

- You can also play a recorded programme by pressing the **QUICK** button.


DVD-RAM(VR)
1/4
00:01:45
Off
ENG D 5.1CH
Off
Off
MOVE
CHANGE

- Press the ▲▼ buttons to select **Title**.
- Press the ◀ ▶ buttons to select to play the title list, then press the **OK** button.

Title List Screen Elements


③
④
⑤
⑥
①
②
⑦
DVD-RAM(VR)
Title List
No. Title Length Edit
01 19/JAN/2005 1 00:00:21
02 19/JAN/2005 1 00:00:03
03 20/JAN/2005 1 00:00:15
04 20/JAN/2005 1 00:00:16
19/JAN/2005 12:00 AV1
19/JAN/2005
12:00 SP
MOVE
OK
RETURN
EXIT
Title List
Length Edit
00:00:21
00:00:03
Play
Rename
Delete
Edit
Protection
EXIT

① Playback screen for recorded titles.
② Information window for the selected title: Title name, recording date, recording time, lock status, recording mode
③ Recorded title No.
④ Recorded title name
⑤ Recording Length (i.e., the playing time)
⑥ Edit menu
Play: Plays the selected title.
Rename: Renames the title of a selected title.
Delete: Deletes the selected title from the list.
Edit: Deletes a section of title.
Protection: Locks or unlocks the selected title.
⑦ Button display.

Note

- This may depend on the type of disc.
- DVD-RW (V mode)/-R has limited editing function.

Basic Editing (Title List)

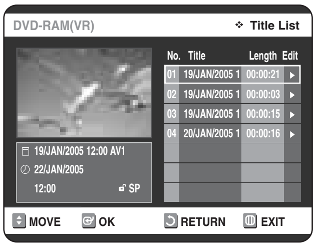
Renaming (Labeling) a Title

Follow these instructions to rename a title list, i.e., to edit the title of a recorded programme.

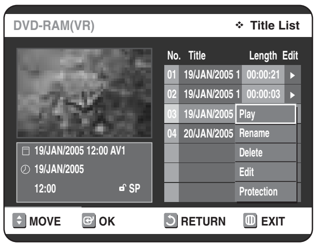
DVD-RAM DVD-RW DVD-R

1 Press the **TITLE LIST** button.
The Title List screen is displayed.

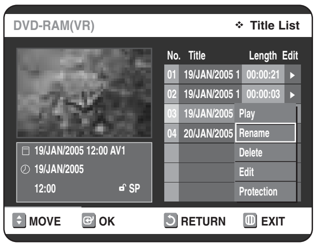
Or use the **MENU** button:
- Press the **MENU** button.
- Press the ▲▼ buttons to select **Disc Navigation**, then press the **OK** or ▶ button twice.

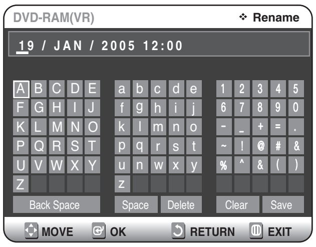

DVD-RAM(VR)
Title List
No. Title Length Edit
01 19/JAN/2005 1 00:00:21
02 19/JAN/2005 1 00:00:03
03 19/JAN/2005 1 00:00:15
04 20/JAN/2005 1 00:00:16
19/JAN/2005 12:00 AV1
22/JAN/2005
12:00
SP
MOVE
OK
RETURN
EXIT

2 Press the ▲▼ buttons to select a title you want to rename from the **Title List**, then press the **OK** or ▶ button.

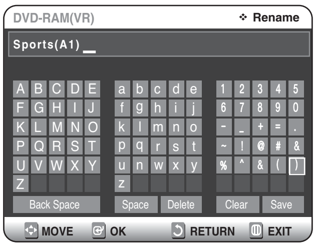

DVD-RAM(VR)
Title List
No. Title Length Edit
01 19/JAN/2005 1 00:00:21
02 19/JAN/2005 1 00:00:03
03 19/JAN/2005
04 20/JAN/2005
Play
Rename
Delete
Edit
Protection
19/JAN/2005 12:00 AV1
19/JAN/2005
12:00
SP
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Rename**, then press the **OK** or ▶ button.
The Rename screen is displayed.


DVD-RAM(VR)
Title List
No. Title Length Edit
01 19/JAN/2005 1 00:00:21
02 19/JAN/2005 1 00:00:03
03 19/JAN/2005
04 20/JAN/2005
Play
Rename
Delete
Edit
Protection
19/JAN/2005 12:00 AV1
19/JAN/2005
12:00
SP
MOVE
OK
RETURN
EXIT

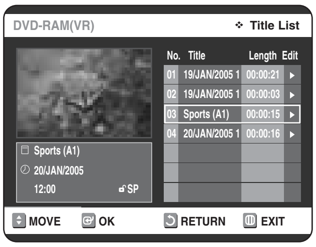

DVD-RAM(VR)
Rename
19 / JAN / 2005 12:00
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u n w x y z
1 2 3 4 5 6 7 8 9 0
Back Space
Space
Delete
Clear
Save
MOVE
OK
RETURN
EXIT

4 Select the desired characters using the ▲▼ ◀ ▶ buttons, press the **OK** button.


DVD-RAM(VR)
Rename
Sports(A1)
Back Space
Space
Delete
Clear
Save
MOVE
OK
RETURN
EXIT

- **Back Space:** Moves the cursor one position backwards.(Equivalent to the **CLEAR** button)
- **Space:** Enters a blank and moves the cursor one forward (to the right).
- **Delete:** Deletes the character at the cursor position.
- **Clear:** Deletes all the character inputs.
- **Save:** Registers the character inputs.

5 Press the ▲▼ ◀ ▶ buttons to select Save, and then press the **OK** button.
The changed title name is displayed in the title field of the selected title.


DVD-RAM(VR)
Title List
No. Title Length Edit
01 19/JAN/2005 1 00:00:21
02 19/JAN/2005 1 00:00:03
03 Sports (A1) 00:00:15
04 20/JAN/2005 1 00:00:16
Sports (A1)
20/JAN/2005
12:00
SP
MOVE
OK
RETURN
EXIT

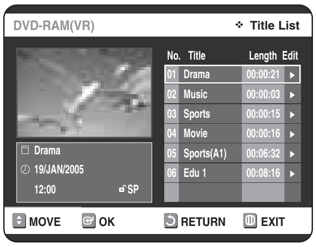
Locking (Protecting) a Title

Follow these instructions to lock a title to protect it from accidental deletion.

DVD-RAM DVD-RW DVD-R

1 Press the **TITLE LIST** button.
The Title List screen is displayed.

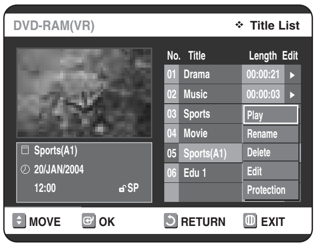
Or use the **MENU** button:
- Press the MENU button.
- Press the ▲▼ buttons to select **Disc Navigation**, then press the **OK** or ▶ button twice.


DVD-RAM(VR) ✧ Title List

Drama
19/JAN/2005
12:00 SP

No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports	00:00:15	▶
04	Movie	00:00:16	▶
05	Sports(A1)	00:06:32	▶
06	Edu 1	00:08:16	▶

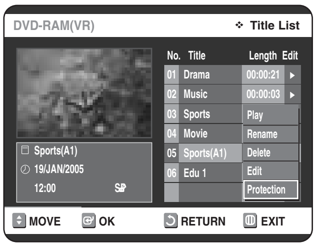
2 Press the ▲▼ buttons to select a title you want to protect in the **Title List**, then press the **OK** or ▶ button.


DVD-RAM(VR) ✧ Title List

Sports(A1)
20/JAN/2004
12:00 SP

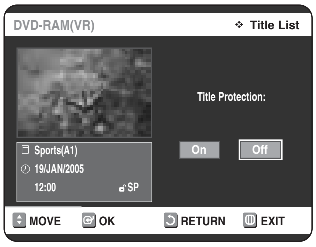
No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports		Play
04	Movie		Rename
05	Sports(A1)		Delete
06	Edu 1		Edit
			Protection

3 Press the ▲▼ buttons to select **Protection**, then press the **OK** or ▶ button.


DVD-RAM(VR) ✧ Title List

Sports(A1)
19/JAN/2005
12:00 SP

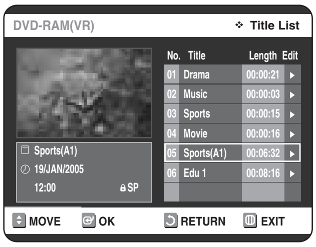
No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports		Play
04	Movie		Rename
05	Sports(A1)		Delete
06	Edu 1		Edit
			Protection


DVD-RAM(VR) ✧ Title List

Sports(A1)
19/JAN/2005
12:00 SP

Title Protection:
On Off

4 Press the ◀ ▶ buttons to select **On**, then press the **OK** button. The key icon on the information window for the selected title changes to the locked status. (🔓→🔒)


DVD-RAM(VR) ✧ Title List

Sports(A1)
19/JAN/2005
12:00 🔒SP

No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports	00:00:15	▶
04	Movie	00:00:16	▶
05	Sports(A1)	00:06:32	▶
06	Edu 1	00:08:16	▶

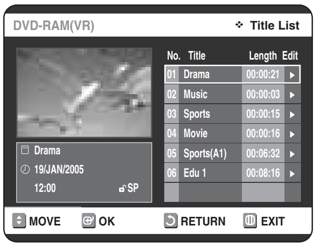
Deleting a Title

Follow these instructions to delete a title from the Title List.

DVD-RAM DVD-RW DVD-R

1 Press the **TITLE LIST** button.
The Title List screen is displayed.

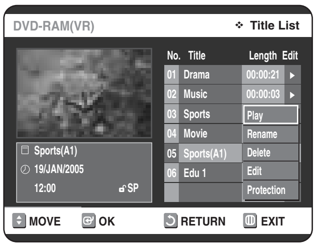
Or use the **MENU** button:
- Press the **MENU** button.
- Press the ▲▼ buttons to select **Disc Navigation**, then press the **OK** or ▶ button twice.


DVD-RAM(VR) ✧ Title List

Drama
19/JAN/2005
12:00 SP

No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports	00:00:15	▶
04	Movie	00:00:16	▶
05	Sports(A1)	00:06:32	▶
06	Edu 1	00:08:16	▶

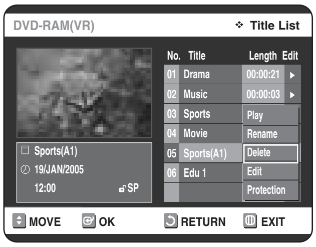
2 Press the ▲▼ buttons to select a title you want to delete in the Title List, then press the **OK** or ▶ button.


DVD-RAM(VR) ✧ Title List

Sports(A1)
19/JAN/2005
12:00 SP

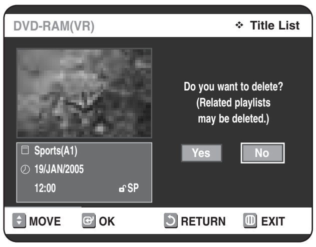
No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports		Play
04	Movie		Rename
05	Sports(A1)		Delete
06	Edu 1		Edit
			Protection

3 Press the ▲▼ buttons to select **Delete**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Title List
Sports(A1)
19/JAN/2005
12:00
SP
Play
Rename
Delete
Edit
Protection
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports		
04	Movie		
05	Sports(A1)		
06	Edu 1		

You will be prompted with a confirmation message. DVD-RAM/-RW (VR mode): Since Playlist is present, the message 'Do you want to delete?(Related playlists may be deleted.)' is displayed.


DVD-RAM(VR)
Title List
Sports(A1)
19/JAN/2005
12:00
SP
Yes
No
MOVE
OK
RETURN
EXIT

Do you want to delete?
(Related playlists
may be deleted.)

DVD-RW (V mode)/-R: Since Playlist is not present, the message 'Do you want to delete?' is displayed.

- The message depend on the type of disc.

4 Press the ◀ ▶ buttons to select **Yes**, then press the **OK** button.

Note

- You cannot delete a protected title.
  If you want to delete a protected title, select **Off** in the Title Protection menu.
  (See page 73)
- Once a title is deleted from the Title List it cannot be recovered.
- Once DVD-R, DVD-RW is finalised, it cannot be deleted.
- With DVD-R, titles are only deleted from the menu, however, the Title remains physically on the disc.

Deleting a Section of a Title

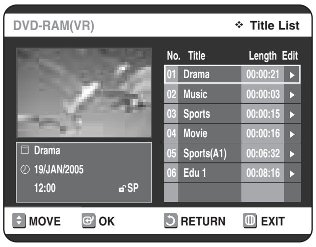
Follow these instructions to delete a section of a Title List title.

DVD-RAM DVD-RW

(VR mode)

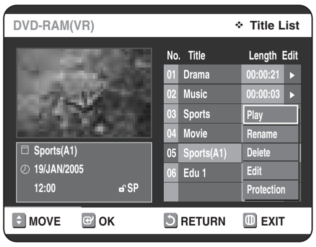
1 Press the **TITLE LIST** button.
The Title List screen is displayed.

Or use the **MENU** button:
- Press the **MENU** button.
- Press the ▲▼ buttons to select **Disc Navigation**, then press the **OK** or ▶ button twice.


DVD-RAM(VR)
Title List
Drama
19/JAN/2005
12:00
SP
MOVE
OK
RETURN
EXIT

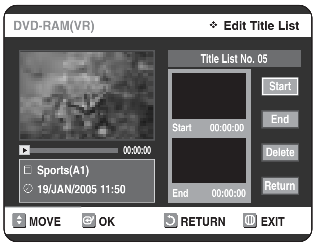
No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports	00:00:15	▶
04	Movie	00:00:16	▶
05	Sports(A1)	00:06:32	▶
06	Edu 1	00:08:16	▶

2 Press the ▲▼ buttons to select a title you want to delete from the Title List, then press the **OK** or ▶ button.

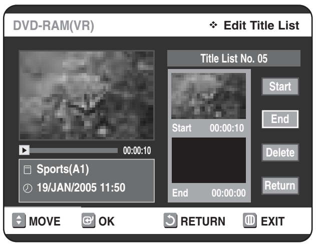

DVD-RAM(VR)
Title List
Sports(A1)
19/JAN/2005
12:00
SP
Play
Rename
Delete
Edit
Protection
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	Drama	00:00:21	▶
02	Music	00:00:03	▶
03	Sports		
04	Movie		
05	Sports(A1)		
06	Edu 1		

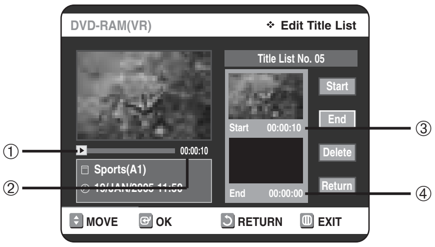
3 Press the ▲▼ buttons to select **Edit**, then press the **OK** or ▶ button.
The Edit Title List screen is displayed.


DVD-RAM(VR)
Edit Title List
Title List No. 05
00:00:00
Sports(A1)
19/JAN/2005 11:50
Start 00:00:00
End 00:00:00
Start
End
Delete
Return
MOVE
OK
RETURN
EXIT

4 Press the **OK** button at the starting point.
The image and starting point time are displayed in the section deletion starting point window.


DVD-RAM(VR)
Edit Title List
Title List No. 05
Start
End
Delete
Return
Start 00:00:10
End 00:00:00
00:00:10
Sports(A1)
19/JAN/2005 11:50
MOVE
OK
RETURN
EXIT

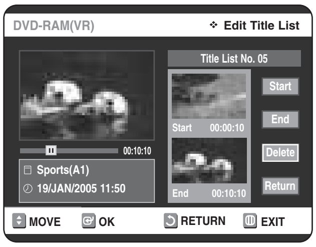
Edit Title List Screen Elements


DVD-RAM(VR)
Edit Title List
Title List No. 05
Start
End
Delete
Return
Start 00:00:10
End 00:00:00
00:00:10
Sports(A1)
19/JAN/2005 11:50
MOVE
OK
RETURN
EXIT
①
②
③
④

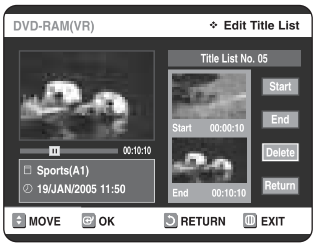
① Playback bar
② Playtime
③ Section deletion starting point window and time
④ Section deletion end point window and time
- Select the start and end points of the section you want to delete using the playback related buttons.
- Playback related buttons: (▶II, I◀◀, ◀◀, ▶▶).

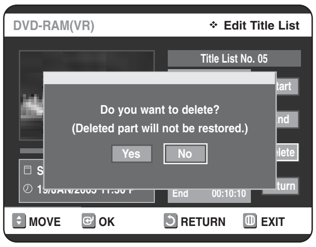
---

5 Press the **OK** button at the end point.
The image and end point time are displayed in the Section deletion ending point window.


DVD-RAM(VR)
Edit Title List
Title List No. 05
Start
End
Delete
Return
Start 00:00:10
End 00:10:10
00:10:10
Sports(A1)
19/JAN/2005 11:50
MOVE
OK
RETURN
EXIT

6 Press the ▲▼ buttons to select **Delete**, then press the **OK** button.


DVD-RAM(VR)
Edit Title List
Title List No. 05
Start
End
Delete
Return
Start 00:00:10
End 00:10:10
00:10:10
Sports(A1)
19/JAN/2005 11:50
MOVE
OK
RETURN
EXIT


Do you want to delete?
(Deleted part will not be restored.)
DVD-RAM(VR)
Edit Title List
Title List No. 05
Yes
No
End 00:10:10
MOVE
OK
RETURN
EXIT

---

7 Press the ◀ ▶ buttons to select **Yes**, then press the **OK** button.
The selected section has been deleted.
To return to the Title List, press the ▲▼ buttons to select Return.

Note

- The length of the section to be deleted must be at least 5 seconds long.
- If the length of the section to be deleted is less than 5 seconds, you will be prompted with the message 'The range is too short.'.
- If the end time precedes the starting time, you will be prompted with the message ‘End point cannot be marked earlier than start point’.
- The section cannot be deleted when it includes a still picture.
- Press the **MENU** button after the operation has finished.
  The Title List screen will disappear.

Advanced Editing (Playlist)

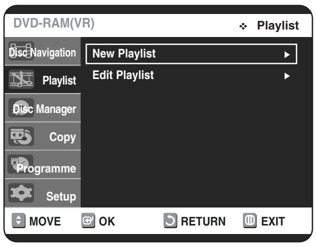
Creating a Playlist

Follow these instructions to create a new playlist title from a recorded title.

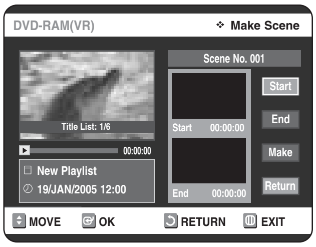
DVD-RAM DVD-RW
(VR mode)

1 With the unit in Stop mode, press the **MENU** button.

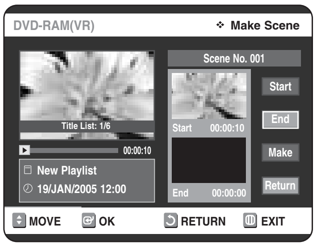
2 Press the ▲▼ buttons to select **Playlist**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Playlist
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
New Playlist
Edit Playlist
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **New Playlist**, then press the **OK** or ▶ button.
The Make Scene screen is displayed.

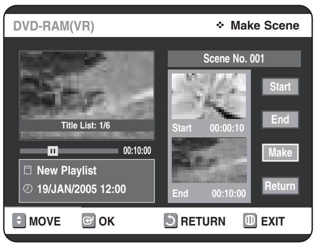

DVD-RAM(VR)
Make Scene
Title List: 1/6
00:00:00
New Playlist
19/JAN/2005 12:00
Scene No. 001
Start 00:00:00
End 00:00:00
Start
End
Make
Return
MOVE
OK
RETURN
EXIT

4 Press the **OK** button at the start point.


DVD-RAM(VR)
Make Scene
Title List: 1/6
00:00:10
New Playlist
19/JAN/2005 12:00
Scene No. 001
Start 00:00:10
End 00:00:00
Start
End
Make
Return
MOVE
OK
RETURN
EXIT

- The image and time at the start point are displayed on the Start window.
- The yellow-coloured selection bar moves to the End item.
- Select the starting point of the section from which you want to create a new scene using the playback related buttons (▶II,I◀◀,▶▶I,◀◀, ▶▶).

5 Press the **OK** button at the end point.


DVD-RAM(VR)
Make Scene
Title List: 1/6
00:10:00
New Playlist
19/JAN/2005 12:00
Scene No. 001
Start 00:00:10
End 00:10:00
Start
End
Make
Return
MOVE
OK
RETURN
EXIT

- The image and end point time are displayed in the End window.
- The yellow-coloured selection bar moves to the Make icon.

- To make a new playlist -

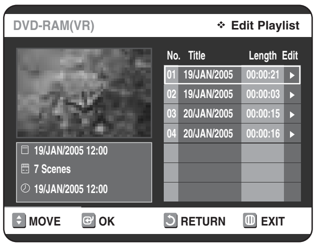
6 Press the ▲▼ buttons to select **Make**, then press the **OK** button.
A new Make Scene screen is displayed.
A new Scene will be added to the current Playlist.

Note

- You can check and see all the scenes on Edit Playlist screen. (See page 79)
- Repeat steps 1~6 if you want to make a new playlist.
- Repeat steps 3~6 if you want to make scenes of the playlist.

- To return to Edit Playlist menu -

7 Press the ▲▼ buttons to select **Return**, then press the **OK** button.
The Edit Playlist screen is displayed.


DVD-RAM(VR)
Edit Playlist
19/JAN/2005 12:00
7 Scenes
19/JAN/2005 12:00
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	19/JAN/2005	00:00:21	▶
02	19/JAN/2005	00:00:03	▶
03	20/JAN/2005	00:00:15	▶
04	20/JAN/2005	00:00:16	▶

8 Press the **MENU** or **PLAY LIST** button after the operation has finished.
The Edit Playlist screen will disappear.

Note

- You can create up to 99 playlist titles.
- Depending on the kind of disc, the displayed screen may have a slight difference.

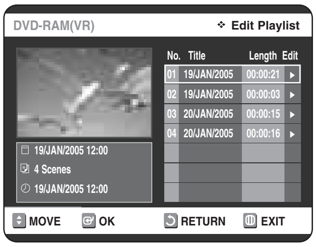
Playing Titles in the Playlist

Follow these instructions to play the playlist titles.

DVD-RAM DVD-RW

(VR mode)

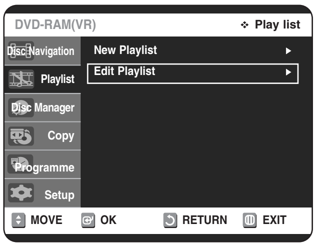
1 Press the **PLAY LIST** button with the disc stopped.
The Edit Playlist screen is displayed.


DVD-RAM(VR)
Edit Playlist
19/JAN/2005 12:00
4 Scenes
19/JAN/2005 12:00
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	19/JAN/2005	00:00:21	▶
02	19/JAN/2005	00:00:03	▶
03	20/JAN/2005	00:00:15	▶
04	20/JAN/2005	00:00:16	▶

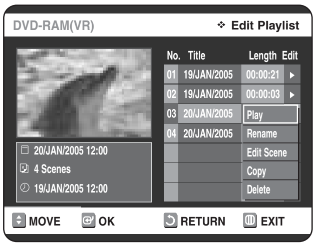
Or use the **MENU** button:

- Press the **MENU** button with the disc stopped.
- Press the ▲▼ buttons to select **Playlist**, then press the **OK** or ▶ button.
- Press the ▲▼ buttons to select **Edit Playlist**, then press the **OK** or ▶ button.

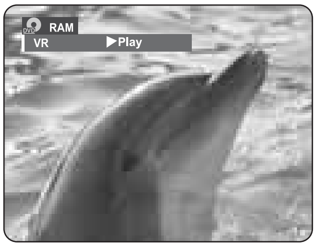

DVD-RAM(VR)
Play list
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
New Playlist
Edit Playlist
MOVE
OK
RETURN
EXIT

2 Press the ▲▼ buttons to select the title you want to play from the Playlist, then press the **OK** or ▶ button.
The Edit Playlist menu is displayed : Play, Rename, Edit Screen, Copy, Delete.

3 Press the ▲▼ buttons to select **Play**, then press the **OK** or ▶ button.
The playlist titles will be played back.


DVD-RAM(VR)
Edit Playlist
20/JAN/2005 12:00
4 Scenes
19/JAN/2005 12:00
Play
Rename
Edit Scene
Copy
Delete
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	19/JAN/2005	00:00:21	▶
02	19/JAN/2005	00:00:03	▶
03	20/JAN/2005		
04	20/JAN/2005		


DVD
RAM
VR
▶Play

4 Press the **STOP** button to stop playing.
The screen returns to the Edit Playlist screen.

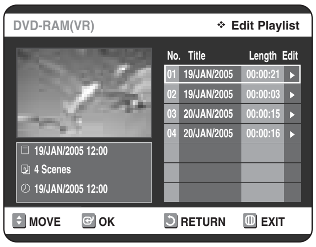
Renaming a Playlist Title

Follow these instructions to rename a playlist Title, i.e. to edit the title of a playlist title.

DVD-RAM DVD-RW

(VR mode)

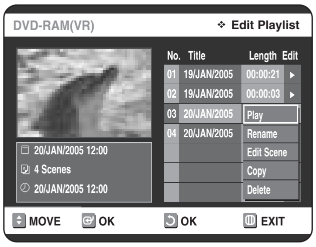
1 Press the **PLAY LIST** button with the disc stopped. The Edit Playlist screen is displayed.


DVD-RAM(VR)
Edit Playlist
No. Title Length Edit
01 19/JAN/2005 00:00:21
02 19/JAN/2005 00:00:03
03 20/JAN/2005 00:00:15
04 20/JAN/2005 00:00:16
19/JAN/2005 12:00
4 Scenes
19/JAN/2005 12:00
MOVE
OK
RETURN
EXIT

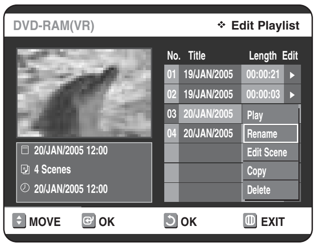
Or use the **MENU** button:

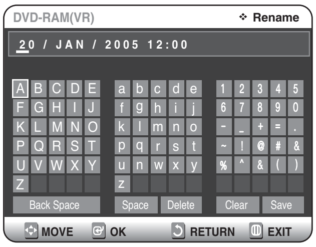
- Press the **MENU** button with the disc stopped.
- Press the ▲▼ buttons to select **Playlist**, then press the **OK** or ▶ button.
- Press the ▲▼ buttons to select **Edit Playlist**, then press the **OK** or ▶ button.

2 Press the ▲▼ buttons to select the title you want to rename from the Playlist, then press the **OK** or ▶ button.
The Edit Playlist menu is displayed :Play, Rename, Edit Scene, Copy, Delete

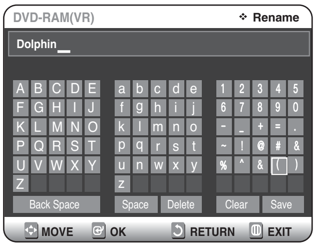

DVD-RAM(VR)
Edit Playlist
No. Title Length Edit
01 19/JAN/2005 00:00:21
02 19/JAN/2005 00:00:03
03 20/JAN/2005
04 20/JAN/2005
Play
Rename
Edit Scene
Copy
Delete
20/JAN/2005 12:00
4 Scenes
20/JAN/2005 12:00
MOVE
OK
OK
EXIT

3 Press the ▲▼ buttons to select **Rename**, then press the **OK** button.
The Rename screen is displayed.


DVD-RAM(VR)
Edit Playlist
No. Title Length Edit
01 19/JAN/2005 00:00:21
02 19/JAN/2005 00:00:03
03 20/JAN/2005
04 20/JAN/2005
Play
Rename
Edit Scene
Copy
Delete
20/JAN/2005 12:00
4 Scenes
20/JAN/2005 12:00
MOVE
OK
OK
EXIT

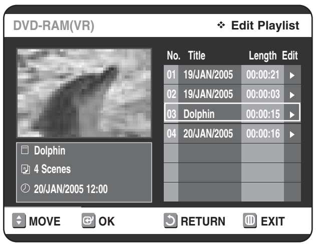

DVD-RAM(VR)
Rename
20 / JAN / 2005 12:00
Back Space
Space
Delete
Clear
Save
MOVE
OK
RETURN
EXIT

4 Enter the desired characters using the ▲▼ ◀ ▶ buttons.


DVD-RAM(VR)
Rename
Dolphin
Back Space
Space
Delete
Clear
Save
MOVE
OK
RETURN
EXIT

- This function is the same as the Rename function in the renaming the title list. (See page 72)
- The maximum number of characters that can be entered is 31.

5 Press the ▲▼ ◀ ▶ buttons to select Save, then press the **OK** button.
The changed title is displayed in the title field of the selected playlist title.


DVD-RAM(VR)
Edit Playlist
No. Title Length Edit
01 19/JAN/2005 00:00:21
02 19/JAN/2005 00:00:03
03 Dolphin 00:00:15
04 20/JAN/2005 00:00:16
Dolphin
4 Scenes
20/JAN/2005 12:00
MOVE
OK
RETURN
EXIT

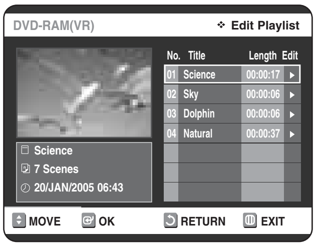
Editing a Scene for the Playlist

Follow these instructions to edit scenes for a playlist.

DVD-RAM DVD-RW

(VR mode)

1 Press the **PLAY LIST** button with the disc stopped.
The Edit Playlist screen is displayed.


DVD-RAM(VR) ✥ Edit Playlist

No.	Title	Length	Edit
01	Science	00:00:17	▶
02	Sky	00:00:06	▶
03	Dolphin	00:00:06	▶
04	Natural	00:00:37	▶

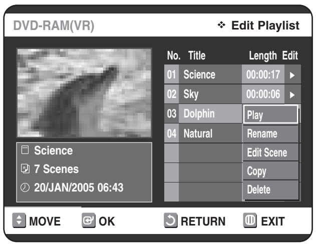
Science
7 Scenes
20/JAN/2005 06:43

MOVE
OK
RETURN
EXIT

Or use the **MENU** button:

- Press the **MENU** button with the disc stopped.
- Press the ▲▼ buttons to select **Playlist**, then press the **OK** or ▶ button.
- Press the ▲▼ buttons to select **Edit Playlist**, then press the **OK** or ▶ button.

2 Press the ▲▼ buttons to select the title you want to edit from the Playlist, and then press the **OK** or ▶ button.
The Edit Playlist menu is displayed:Play, Rename, Edit Scene, Copy, Delete

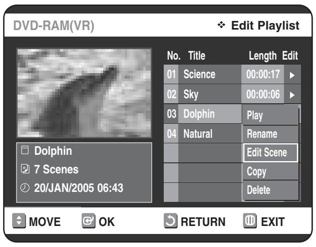

DVD-RAM(VR) ✥ Edit Playlist

No.	Title	Length	Edit
01	Science	00:00:17	▶
02	Sky	00:00:06	▶
03	Dolphin		
04	Natural		

Science
7 Scenes
20/JAN/2005 06:43

Play
Rename
Edit Scene
Copy
Delete
MOVE
OK
RETURN
EXIT

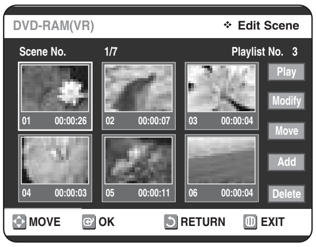
3 Press the ▲▼ buttons to select **Edit Scene**, then press the **OK** or ▶ button.
The Edit Scene screen is displayed.


DVD-RAM(VR) ✥ Edit Playlist

No.	Title	Length	Edit
01	Science	00:00:17	▶
02	Sky	00:00:06	▶
03	Dolphin		
04	Natural		

Dolphin
7 Scenes
20/JAN/2005 06:43

Play
Rename
Edit Scene
Copy
Delete
MOVE
OK
RETURN
EXIT


DVD-RAM(VR) ✥ Edit Scene

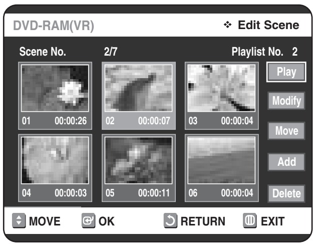
Scene No. 1/7 Playlist No. 3

01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04

Play
Modify
Move
Add
Delete
MOVE
OK
RETURN
EXIT

Playing a Selected Scene

4 Press the ▲▼◀ ▶ buttons to select the scene you want to play, then press the **OK** button.
The playlist title to be played is selected.

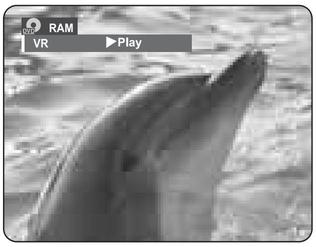

DVD-RAM(VR) ✥ Edit Scene

Scene No. 2/7 Playlist No. 2

01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04

Play
Modify
Move
Add
Delete
MOVE
OK
RETURN
EXIT

5 Press the **OK** button again.
The selected scene will be played back.

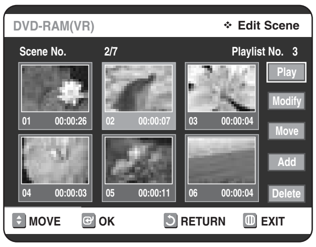


- To stop scene play, press the **STOP** button.

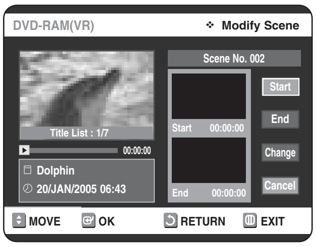
Modifying a Scene (Replacing a Scene)

To setup, follow steps 1 to 3 in page 79.

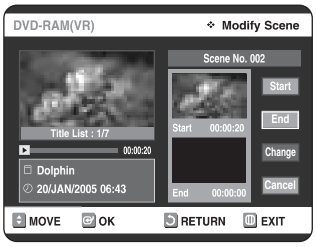
4 Press the ▲▼ ◀ ▶ buttons to select the scene you want to modify, then press the **OK** button.


DVD-RAM(VR)
Edit Scene
Scene No. 2/7
Playlist No. 3
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
Play
Modify
Move
Add
Delete
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select **Modify**, then press the **OK** button.
The Modify Scene screen is displayed.

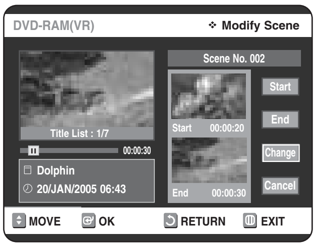

DVD-RAM(VR)
Modify Scene
Title List : 1/7
00:00:00
Dolphin
20/JAN/2005 06:43
Scene No. 002
Start 00:00:00
End 00:00:00
Start
End
Change
Cancel
MOVE
OK
RETURN
EXIT

6 Press the **OK** button at the start point of the scene.


DVD-RAM(VR)
Modify Scene
Title List : 1/7
00:00:20
Dolphin
20/JAN/2005 06:43
Scene No. 002
Start 00:00:20
End 00:00:00
Start
End
Change
Cancel
MOVE
OK
RETURN
EXIT

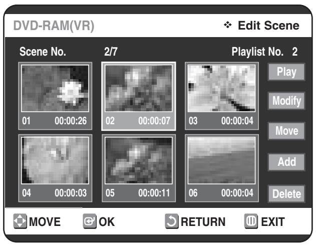
- The image and starting point time are displayed on the Start window.
- Select the starting or ending point of the section you want to modify using the playback related buttons (▶II,I◀◀,▶▶I,▶▶,◀◀).

7 Press the **OK** button at the end point of the scene.


DVD-RAM(VR)
Modify Scene
Title List : 1/7
00:00:30
Dolphin
20/JAN/2005 06:43
Scene No. 002
Start 00:00:20
End 00:00:30
Start
End
Change
Cancel
MOVE
OK
RETURN
EXIT

- The image and ending point time are displayed in the End window.

8 Press the ▲▼ buttons to select **Change**, then press the **OK** button.

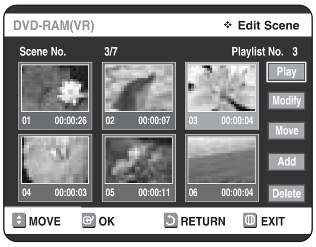

DVD-RAM(VR)
Edit Scene
Scene No. 2/7
Playlist No. 2
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
Play
Modify
Move
Add
Delete
MOVE
OK
RETURN
EXIT

- The scene you want to modify is changed with the selected section.

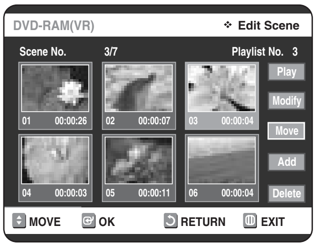
Moving a Scene (Changing the Position of a Scene)

To setup, follow steps 1 to 3 in page 79.

4 Press the ▲▼ ◀ ▶ buttons to select the scene you want to move (change the position), then press the **OK** button.

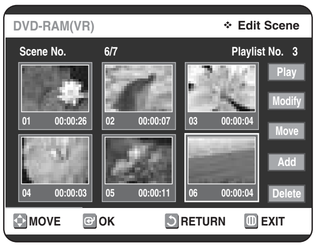

DVD-RAM(VR)
Edit Scene
Scene No. 3/7
Playlist No. 3
Play
Modify
Move
Add
Delete
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select **Move**, then press the **OK** button.

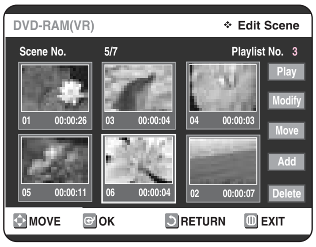

DVD-RAM(VR)
Edit Scene
Scene No. 3/7
Playlist No. 3
Play
Modify
Move
Add
Delete
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
MOVE
OK
RETURN
EXIT

- A yellow selection window is displayed on the scene to be moved.

6 Press the ▲▼ ◀ ▶ buttons to select the position to which you want to move the selected scene, then select the **OK** button.


DVD-RAM(VR)
Edit Scene
Scene No. 6/7
Playlist No. 3
Play
Modify
Move
Add
Delete
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
MOVE
OK
RETURN
EXIT

- The selected scene is moved to the selected position.


DVD-RAM(VR)
Edit Scene
Scene No. 5/7
Playlist No. 3
Play
Modify
Move
Add
Delete
01 00:00:26
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
02 00:00:07
MOVE
OK
RETURN
EXIT

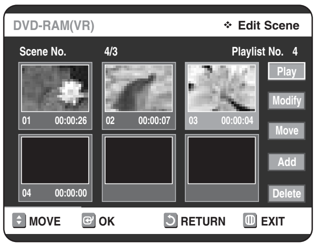
Note

- You cannot move the selected scene to the position of the next scene, because the selected scene should be inserted before that position, which requires no action.
- Depending on the kind of disc, the displayed screen may have a slight difference.

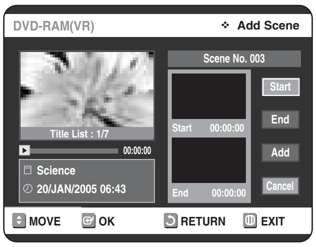
Adding a Scene

To setup, follow steps 1 to 3 in page 79.

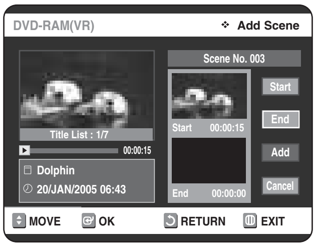
4 Press the ▲▼ ◀ ▶ buttons to select the scene that will have a new scene inserted before it, then press the **OK** button.
A yellow selection window is displayed on the scene to be added as the new scene.


DVD-RAM(VR)
Edit Scene
Scene No. 4/3
Playlist No. 4
Play
Modify
Move
Add
Delete
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:00
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select **add**, then press the **OK** button.
The Add Scene screen is displayed.

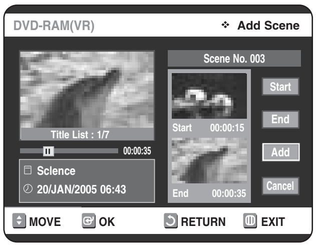

DVD-RAM(VR)
Add Scene
Title List : 1/7
00:00:00
Science
20/JAN/2005 06:43
Scene No. 003
Start 00:00:00
End 00:00:00
Start
End
Add
Cancel
MOVE
OK
RETURN
EXIT

6 Press the **OK** button at the starting point of the scene.


DVD-RAM(VR)
Add Scene
Title List : 1/7
00:00:15
Dolphin
20/JAN/2005 06:43
Scene No. 003
Start 00:00:15
End 00:00:00
Start
End
Add
Cancel
MOVE
OK
RETURN
EXIT

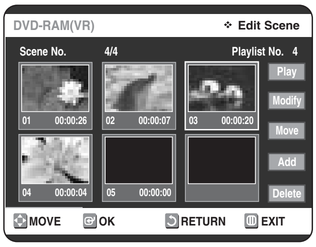
- The image and starting point time are displayed in the Start window.
- Select the end point of the section where you want to add the new scene using the playback related buttons (▶II,I◀◀,▶▶I,◀◀, ▶▶).

7 Press the **OK** button at the end point of the scene.


DVD-RAM(VR)
Add Scene
Scene No. 003
Title List : 1/7
00:00:35
Science
20/JAN/2005 06:43
Start 00:00:15
End 00:00:35
Start
End
Add
Cancel
MOVE
OK
RETURN
EXIT

- The image and time of the end point are displayed in the End window.
- To cancel, press the ▲▼ buttons to select cancel and then press the **OK** button.

8 Press the ▲▼ buttons to select **Add**, then press the **OK** button.

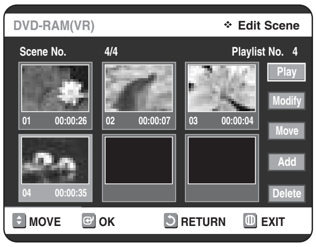

DVD-RAM(VR)
Edit Scene
Scene No. 4/4
Playlist No. 4
01 00:00:26
02 00:00:07
03 00:00:20
04 00:00:04
05 00:00:00
Play
Modify
Move
Add
Delete
MOVE
OK
RETURN
EXIT

- The section you want to add is inserted prior to the scene selected in step.

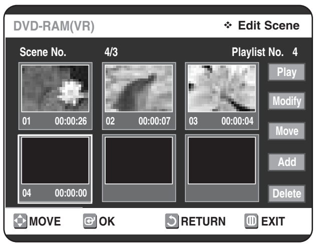
Deleting a Scene

To setup, follow the steps 1 to 3 in page 79.

4 Press the ▲▼ ◀ ▶ buttons to select the scene you want to delete, and then press the **OK** button.

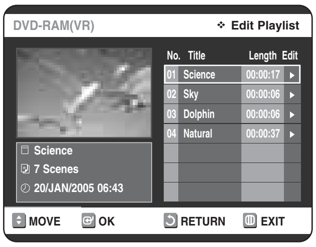

DVD-RAM(VR)
Edit Scene
Scene No. 4/4
Playlist No. 4
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:35
Play
Modify
Move
Add
Delete
MOVE
OK
RETURN
EXIT

5 Press the ▲▼ buttons to select **Delete**, then press the **OK** button.


DVD-RAM(VR)
Edit Scene
Scene No. 4/3
Playlist No. 4
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:00
Play
Modify
Move
Add
Delete
MOVE
OK
RETURN
EXIT

Copying a Playlist to the VCR

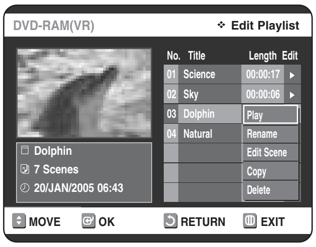
1 Press the **PLAY LIST** button with the disc stopped. The Edit Playlist screen is displayed.


DVD-RAM(VR)
Edit Playlist
No. Title Length Edit
01 Science 00:00:17
02 Sky 00:00:06
03 Dolphin 00:00:06
04 Natural 00:00:37
Science
7 Scenes
20/JAN/2005 06:43
MOVE
OK
RETURN
EXIT

Or use the **MENU** button:

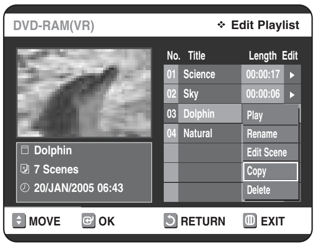
- Press the **MENU** button with the disc stopped.
- Press the ▲▼ buttons to select **Playlist**, then press the **OK** or ▶ button.
- Press the ▲▼ buttons to select **Edit Playlist**, then press the **OK** or ▶ button.

2 Press the ▲▼ buttons to select the title you want to edit from the Playlist, and then press the **OK** or ▶ button.
The Edit Playlist menu is displayed:Play, Rename, Edit Scene, Copy, Delete


DVD-RAM(VR)
Edit Playlist
No. Title Length Edit
01 Science 00:00:17
02 Sky 00:00:06
03 Dolphin
04 Natural
Play
Rename
Edit Scene
Copy
Delete
Dolphin
7 Scenes
20/JAN/2005 06:43
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Copy**, then press the **OK** button.

- The title you choose is played and copied to VCR tape.


DVD-RAM(VR)
Edit Playlist
No. Title Length Edit
01 Science 00:00:17
02 Sky 00:00:06
03 Dolphin
04 Natural
Play
Rename
Edit Scene
Copy
Delete
Dolphin
7 Scenes
20/JAN/2005 06:43
MOVE
OK
RETURN
EXIT

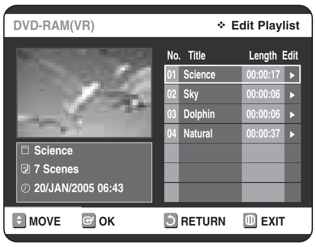
4 Press the **MENU** button after the operation has finished. The menu screen will disappear.

Note

- The playlist can contain up to 99 playlist titles.

Deleting a Playlist from the Playlist

1 Press the **PLAY LIST** button with the disc stopped. The Edit Playlist screen is displayed.

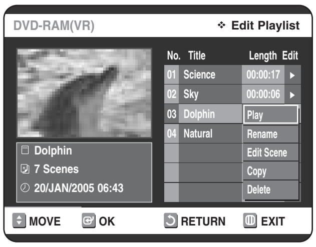

DVD-RAM(VR)
Edit Playlist
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	Science	00:00:17	▶
02	Sky	00:00:06	▶
03	Dolphin	00:00:06	▶
04	Natural	00:00:37	▶

Science
7 Scenes
20/JAN/2005 06:43

Or use the **MENU** button:
- Press the **MENU** button with the disc stopped.
- Press the ▲▼ buttons to select **Playlist**, then press the **OK** or ▶ button.
- Press the ▲▼ buttons to select **Edit Playlist**, then press the **OK** or ▶ button.

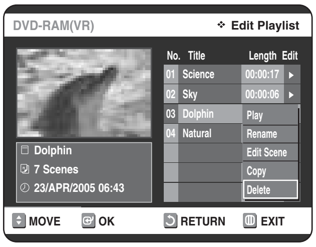
2 Press the ▲▼ buttons to select the title you want to edit from the Playlist, then press the **OK** or ▶ button. The delete Playlist menu is displayed:Play, Rename, Edit Scene, Copy, Delete


DVD-RAM(VR)
Edit Playlist
Play
Rename
Edit Scene
Copy
Delete
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	Science	00:00:17	▶
02	Sky	00:00:06	▶
03	Dolphin		
04	Natural		

Dolphin
7 Scenes
20/JAN/2005 06:43

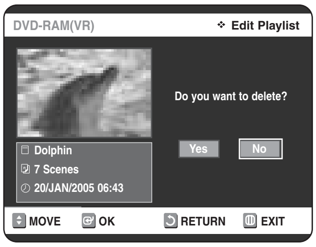
3 Press the ▲▼ buttons to select **Delete**, then press the **OK** button.


DVD-RAM(VR)
Edit Playlist
Play
Rename
Edit Scene
Copy
Delete
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	Science	00:00:17	▶
02	Sky	00:00:06	▶
03	Dolphin		
04	Natural		

Dolphin
7 Scenes
23/APR/2005 06:43

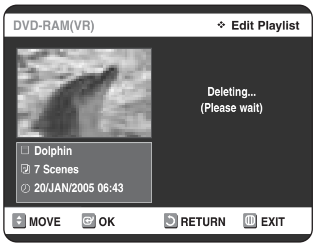
- You will be prompted with the delete confirmation message 'Do you want to delete?'.


DVD-RAM(VR)
Edit Playlist
Yes
No
MOVE
OK
RETURN
EXIT

Do you want to delete?

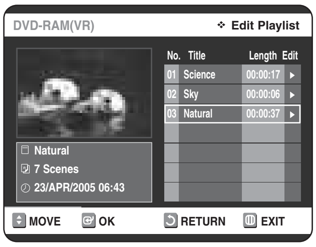
Dolphin
7 Scenes
20/JAN/2005 06:43

4 Press the ◀ ▶ buttons to select **Yes**, then press the **OK** button.
You automatically returned to the Edit Playlist screen after the delete operation has finished.


DVD-RAM(VR)
Edit Playlist
MOVE
OK
RETURN
EXIT

Deleting...
(Please wait)

Dolphin
7 Scenes
20/JAN/2005 06:43


DVD-RAM(VR)
Edit Playlist
MOVE
OK
RETURN
EXIT

No.	Title	Length	Edit
01	Science	00:00:17	▶
02	Sky	00:00:06	▶
03	Natural	00:00:37	▶

Natural
7 Scenes
23/APR/2005 06:43

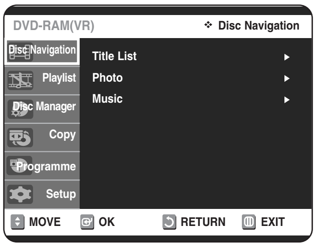
Disc Manager

Editing the Disc Name

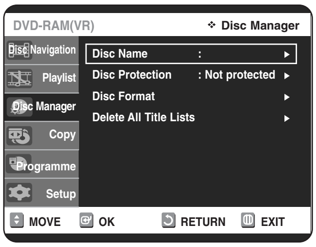
Follow these these instructions to give a name to a disc.

DVD-RAM DVD-RW DVD-R

1 With the unit in Stop mode, press the **MENU** button.

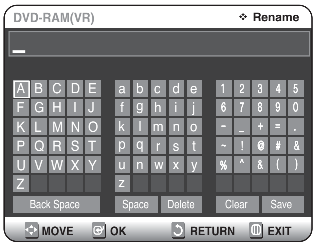

DVD-RAM(VR)
Disc Navigation
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Title List
Photo
Music
MOVE
OK
RETURN
EXIT

2 Press the ▲▼ buttons to select **Disc Manager**, then press the **OK** or ▶ button.

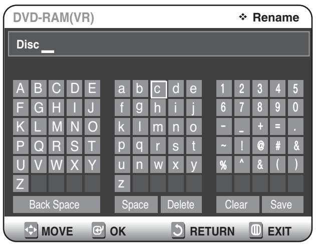

DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
MOVE
OK
RETURN
EXIT

Disc Name :
Disc Protection : Not protected
Disc Format
Delete All Title Lists

3 Press the ▲▼ buttons to select **Disc Name**, then press the **OK** or ▶ button.
The Edit Name screen is displayed.

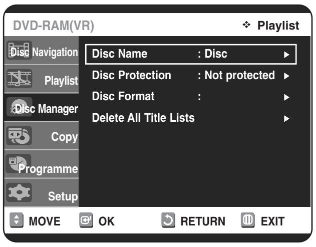

DVD-RAM(VR)
Rename
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0 - _ + = . ~ ! @ # & % ^ & ( )
Back Space
Space
Delete
Clear
Save
MOVE
OK
RETURN
EXIT

4 Enter the desired characters using the ▲▼ ◀ ▶ buttons.


DVD-RAM(VR)
Rename
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0 - _ + = . ~ ! @ # & % ^ & ( )
Back Space
Space
Delete
Clear
Save
MOVE
OK
RETURN
EXIT

Disc _

5 Press the ▲▼ ◀ ▶ buttons to select **Save**, then press the **OK** button.
A disc name is given to the disc.


DVD-RAM(VR)
Playlist
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
MOVE
OK
RETURN
EXIT

Disc Name : Disc
Disc Protection : Not protected
Disc Format :
Delete All Title Lists

Note

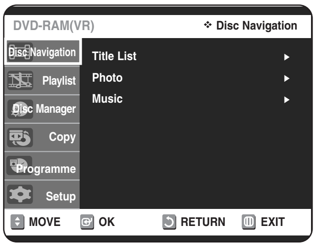
- You may need to clear disc protection before beginning editing.
- Depending on the kind of disc, the displayed screen may be different.

Disc Protection

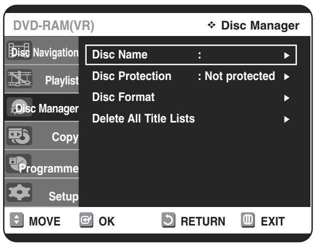
Disc Protect allows you to protect your discs from being formatted or deleted due to unintended operations.

DVD-RAM DVD-RW DVD-R

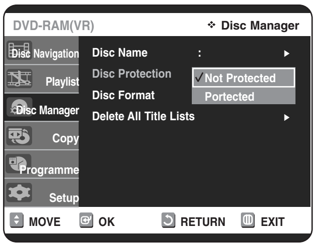
1 With the unit in Stop mode, press the **MENU** button.


DVD-RAM(VR)
Disc Navigation
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Title List
Photo
Music
MOVE
OK
RETURN
EXIT

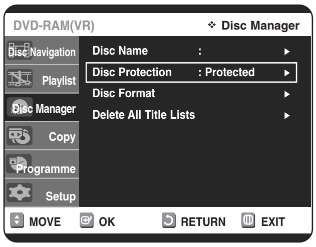
2 Press the ▲▼ buttons to select **Disc Manager**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Protection : Not protected
Disc Format
Delete All Title Lists
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Disc Protection**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Protection
✓Not Protected
Portected
Disc Format
Delete All Title Lists
MOVE
OK
RETURN
EXIT

4 Press the ▲▼ button to select **Protected**, then press the **OK** or ▶ button.

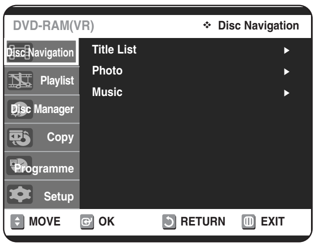

DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Protection : Protected
Disc Format
Delete All Title Lists
MOVE
OK
RETURN
EXIT

Formatting a Disc

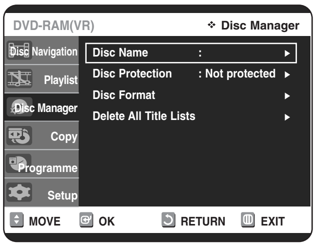
Use these instructions to format a disc.
The disc protect should be cleared

DVD-RAM DVD-RW

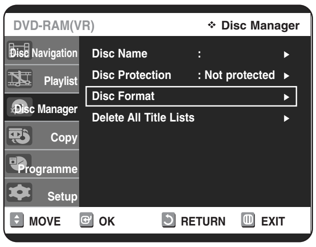
1 With the unit in Stop mode, press the **MENU** button.


DVD-RAM(VR)
Disc Navigation
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Title List
Photo
Music
MOVE
OK
RETURN
EXIT

2 Press the ▲▼ buttons to select **Disc Manager**, then press the **OK** or ▶ button.

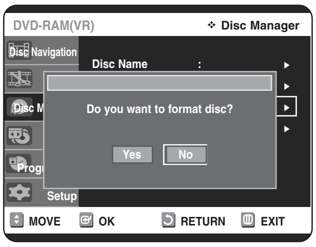

DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Protection : Not protected
Disc Format
Delete All Title Lists
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ buttons to select **Disc Format**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Protection : Not protected
Disc Format
Delete All Title Lists
MOVE
OK
RETURN
EXIT

DVD-RAM

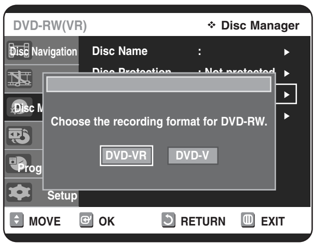
- You will be prompted with the confirmation message 'Do you want to format disc?'.


Do you want to format disc?
DVD-RAM(VR)
Disc Manager
Disc Navigation
Disc Name :
Setup
Yes
No
MOVE
OK
RETURN
EXIT

- If you select “Yes”, you will be prompted with the confirmation message 'All data will be deleted. Do you want to continue?'.

DVD-RW

- You will be prompted with the confirmation message ‘Choose the recording format for DVD- RW.’


DVD-RW(VR)
Disc Manager
Disc Navigation
Disc Name
Setup
DVD-VR
DVD-V
MOVE
OK
RETURN
EXIT

Choose the recording format for DVD-RW.

4 Press the ◀ ▶ buttons to select **Yes**, then press the **OK** button. The disc is formatted.

DVD-VR mode and DVD-V mode are defined according to their recording format.

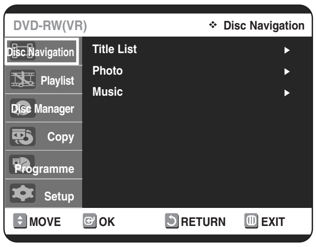
	DVD-VR mode	DVD-V mode
DISC	DVD-RAM DVD-RW	DVD-RW DVD-R

Finalising a disc

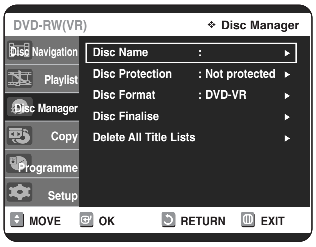
Use these instructions to format a disc.
The disc protect should be cleared

DVD-RW DVD-R

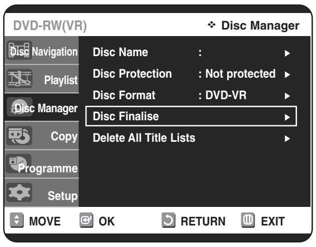
1 With the unit in Stop mode, press the **MENU** button.

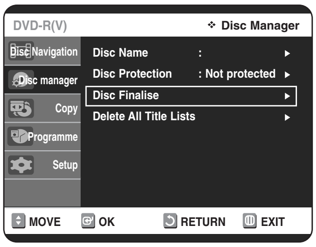

DVD-RW(VR)
Disc Navigation
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Title List
Photo
Music
MOVE
OK
RETURN
EXIT

2 Press the ▲▼ buttons to select **Disc Manager**, then press the **OK** or ▶ button.

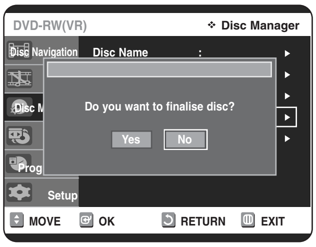

DVD-RW(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Protection : Not protected
Disc Format : DVD-VR
Disc Finalise
Delete All Title Lists
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ button to select **Disc Finalise**, then press the **OK** or ▶ button.


DVD-RW(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Protection : Not protected
Disc Format : DVD-VR
Disc Finalise
Delete All Title Lists
MOVE
OK
RETURN
EXIT

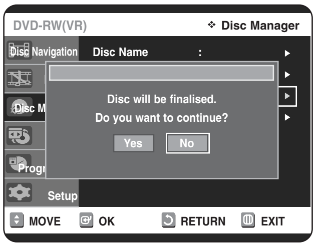

DVD-R(V)
Disc Manager
Disc Navigation
Disc manager
Copy
Programme
Setup
Disc Name :
Disc Protection : Not protected
Disc Finalise
Delete All Title Lists
MOVE
OK
RETURN
EXIT

You will be prompted with the message 'Do you want to finalise disc?'.


DVD-RW(VR)
Disc Manager
Disc Navigation
Disc Name :
Setup
Yes
No
MOVE
OK
RETURN
EXIT

Do you want to finalise disc?

If you select Yes, you will be prompted again with the message ' Disc will be finalised. Do you want to continue?'


DVD-RW(VR)
Disc Manager
Disc Navigation
Disc Name :
Setup
Yes
No
MOVE
OK
RETURN
EXIT

Disc will be finalised.
Do you want to continue?

4 Press the ◀ ▶ buttons to select **Yes**, then press the **OK** button. The disc is finalised.

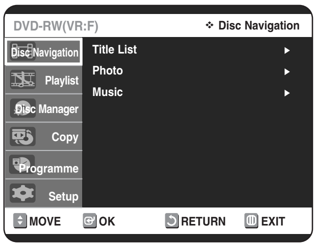
Note

- Once a disc is finalised, you cannot delete titles from the record list.
- After being finalised, the DVD-RW(V mode)/-R operates in the same manner as a DVD-Video.
- Depending on the disc type , the displayed screen may be different .
- Finalising time may be different depending on the amount of data recorded on the disc.
- Data on the disc will be damaged if the recorder is powered off during finalise process.

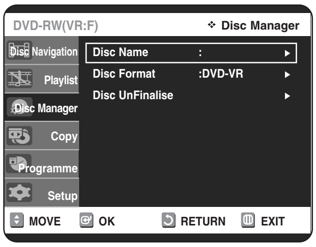
Unfinalising a disc (V/VR mode)

DVD-RW

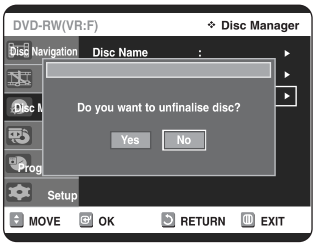
1 With the unit in Stop mode, press the **MENU** button.


DVD-RW(VR:F)
Disc Navigation
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Title List
Photo
Music
MOVE
OK
RETURN
EXIT

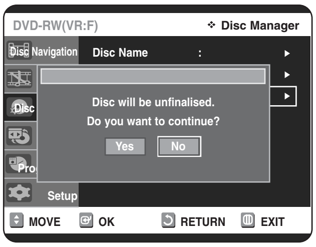
2 Press the ▲▼ buttons to select **Disc Manager**, then press the **OK** or ▶ button.


DVD-RW(VR:F)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Disc Name :
Disc Format :DVD-VR
Disc UnFinalise
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ button to select **Disc Unfinalise**, then press the **OK** or ▶ button.
You will be prompted with the message 'Do you want to unfinalise disc?'.


Do you want to unfinalise disc?
DVD-RW(VR:F)
Disc Manager
Disc Navigation
Disc Name :
Setup
Yes
No
MOVE
OK
RETURN
EXIT

If you select Yes, you will be prompted again with the message 'Disc will be unfinalised. Do you want to continue?'


Disc will be unfinalised.
Do you want to continue?
DVD-RW(VR:F)
Disc Manager
Disc Navigation
Disc Name :
Setup
Yes
No
MOVE
OK
RETURN
EXIT

4 Press the ◀ ▶ buttons to select **Yes**, then press the **ENTER** button.
The disc is unfinalised.

Note

- A DVD-RW can be finalised or unfinalised in V mode.

	Finalise	Unfinalise
Mark	DVD-Video(RW)	DVD-RW(V mode)
Operation	Same as DVD-Video	Additional recording, protection and deletion are possible.

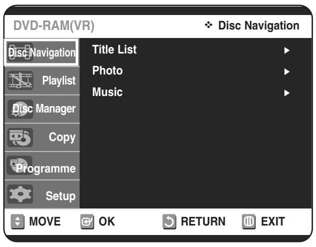
- A DVD-RW can be finalised or unfinalised in VR mode.

	Finalise	Unfinalise
Mark	DVD-RW(VR:F)	DVD-RW(VR mode)
Operation	Additional recording, deletion, editing, and protection are impossible.	Additional recording, deletion, editing, and protection are possible.

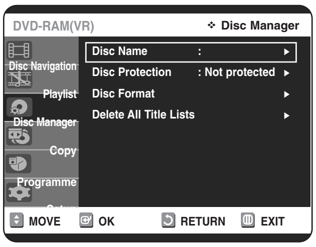
Delete All Title Lists

DVD-RAM DVD-RW DVD-R

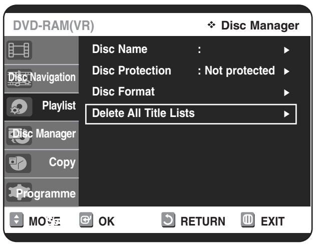
1 With the unit in Stop mode, press the **MENU** button.


DVD-RAM(VR)
Disc Navigation
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Setup
Title List
Photo
Music
MOVE
OK
RETURN
EXIT

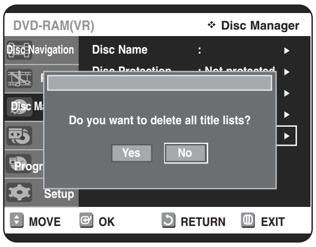
2 Press the ▲▼ buttons to select **Disc Manager**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Disc Name :
Disc Protection : Not protected
Disc Format
Delete All Title Lists
MOVE
OK
RETURN
EXIT

3 Press the ▲▼ button to select **Delete All Title Lists**, then press the **OK** or ▶ button.


DVD-RAM(VR)
Disc Manager
Disc Navigation
Playlist
Disc Manager
Copy
Programme
Disc Name :
Disc Protection : Not protected
Disc Format
Delete All Title Lists
MOVE
OK
RETURN
EXIT

- You will be prompted with the confirmation message 'Do you want to delete all title lists?'.


DVD-RAM(VR)
Disc Manager
Disc Navigation
Disc Name :
Setup
Yes
No
MOVE
OK
RETURN
EXIT

Do you want to delete all title lists?

- When Protected Title exists: The Delete All Title List function will not operate. If there is a title containing a still picture, however, that function will not operate.
  If you want to delete a protected title, disable Protect for it on the Lock item.

4 Press the ◀ ▶ buttons to select **Yes**, then press the **OK** button.
All title lists are deleted.

14. Circuit Operating Descriptions

14-1 Power

14-1-1 About S.M.P.S

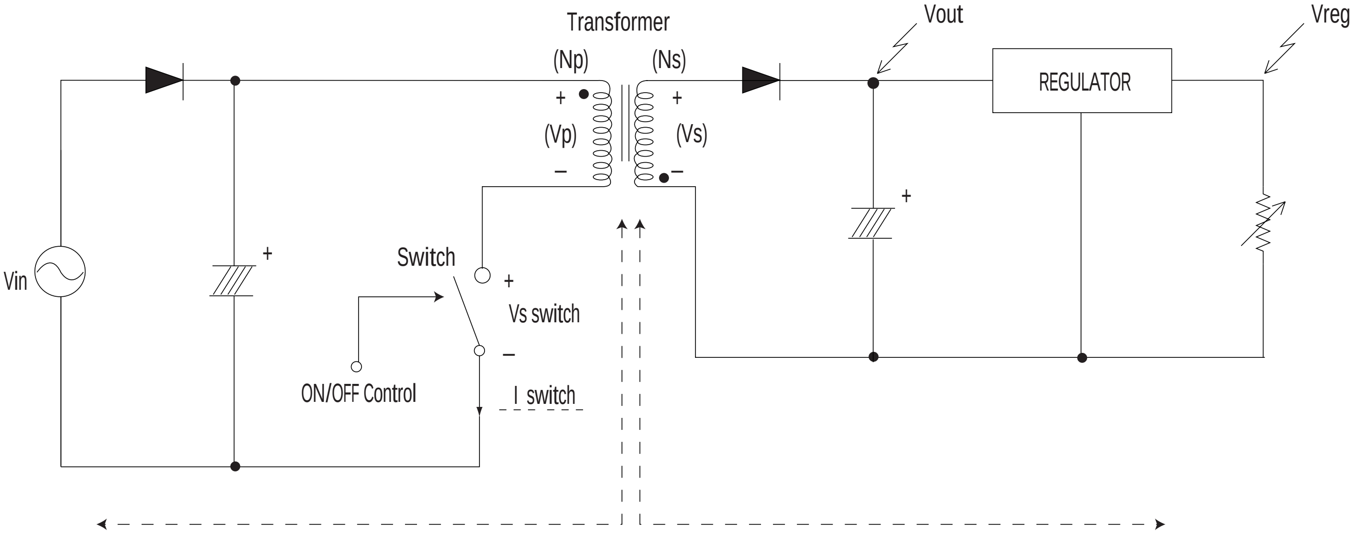

Transformer
(Np)
(Ns)
+
+
(Vp)
(Vs)
−
−
Vout
Vreg
REGULATOR
+
+
Vin
Switch
+
Vs switch
−
ON/OFF Control
I switch

Fig. 14-1

◆Terms

1) 1st : Common power input to 1st winding.
2) 2nd : Circuit followings output winding of transformer.
3) f (Frequency) : Switching frequency (T : Switching cycle)
4) Duty : (Ton / T) x 100

14-1-2 Circuit description Control

(a) AC Power Rectification/Smoothing Terminal

1) BD01 : Convert AC power to DC (Wave rectification).
2) CIS01 : Smooth the voltage converted to DC.
3) L1S02, C1S04, C1S05 : Noise removal at power input / output.
4) R1S04 : Rush current limit resistance at the momemt of power cord insertion.
· Without R1S04, the bridge diode might be damaged as the rush current increases.

(b) SNUBBER Circuit : R1S02, R1S03, C1S08, C1S07, D1S05

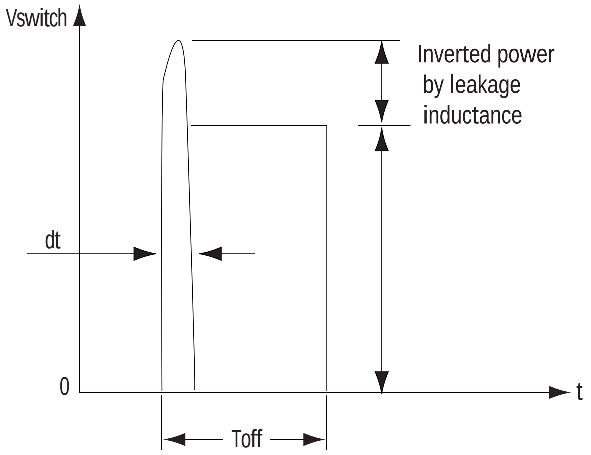


Fig. 13-2

1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
High inverted power occurs at switch off, because of the 1st winding of transformer : (V=-L1 xdi/dt. L1 : Leakage Induction)
A very high residual voltage exist on both terminals of Q1S01 because dt is a very short.

2) SNUBBER circuit protects Q1S01 from damage through leakage voltage suppression by RC, (Charges the leakage voltage to D1S05 and C1S08 and discharges to R1S02, R1S03).

3) C1S38 : For noise removal

(c) IC1S01 Vcc circuit

1) R1S05, R1S07, R1S08 : IC1S01 driving resistance (IC1S011 works through driving resistance at power cord in)
2) IS1S01 Vcc : R1S06, D1S07, C1S09
   ① Use the output of transformer as Vcc,because the current starts to flow into transformer while IC1S01 is active
   ② Rectify to D1S07 and smooth to C1S09.
   ③ Use the output of transformer as IC1S01 Vcc : The loads are different before and after IC1S01 driving. (Vcc of IC1S01 decreases below OFF voltage , using only the resistance dut to lode increase after IC1S01 driving.)

(d) Feedback Control Circuit

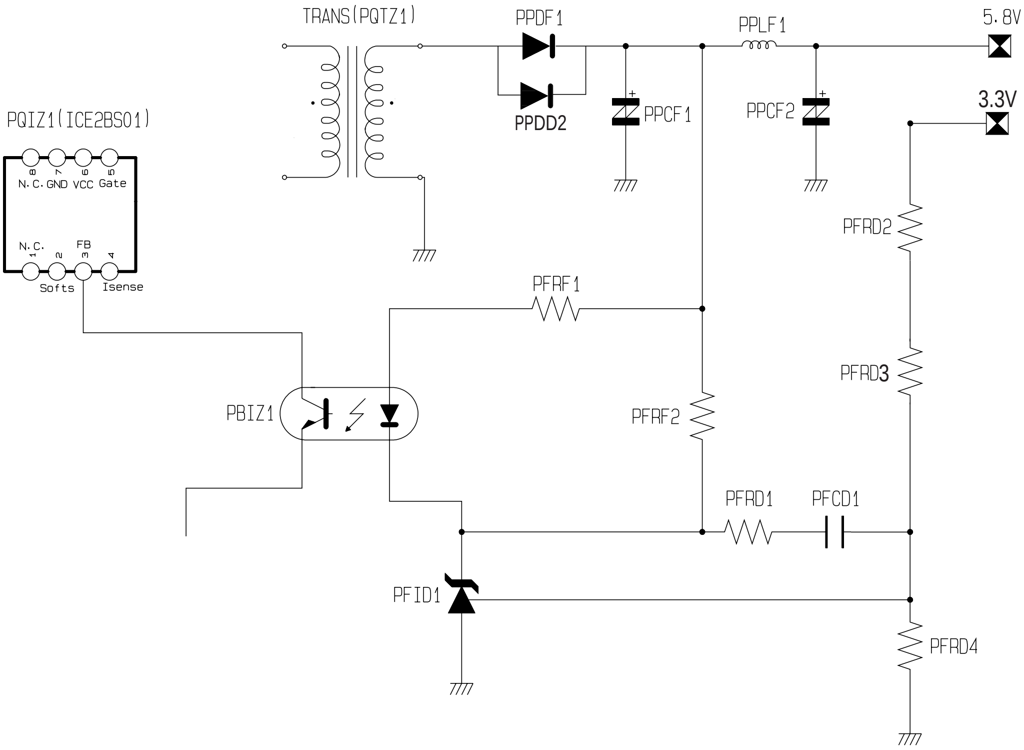

TRANS(PQTZ1)
PPDF1
PPDD2
PPCF1
PPLF1
PPCF2
5.8V
3.3V
PQIZ1(ICE2BS01)
8 7 6 5
N.C. GND VCC Gate
N.C. FB
1 2 3 4
Softs Isense
PFRF1
PFRD2
PFRD3
PBIZ1
PFRF2
PFRD1
PFCD1
PFID1
PFRD4

Fig. 14-3

1) F/B terminal of IC1S01 determines output duty cyle.

2) C-E (Collector-Emitter) of IC1S01 and F/B potential of IC1S01 are same.

14-1-3 Internal Block Diagram (Internal Block Diagram of S.M.P.S. Circuit)

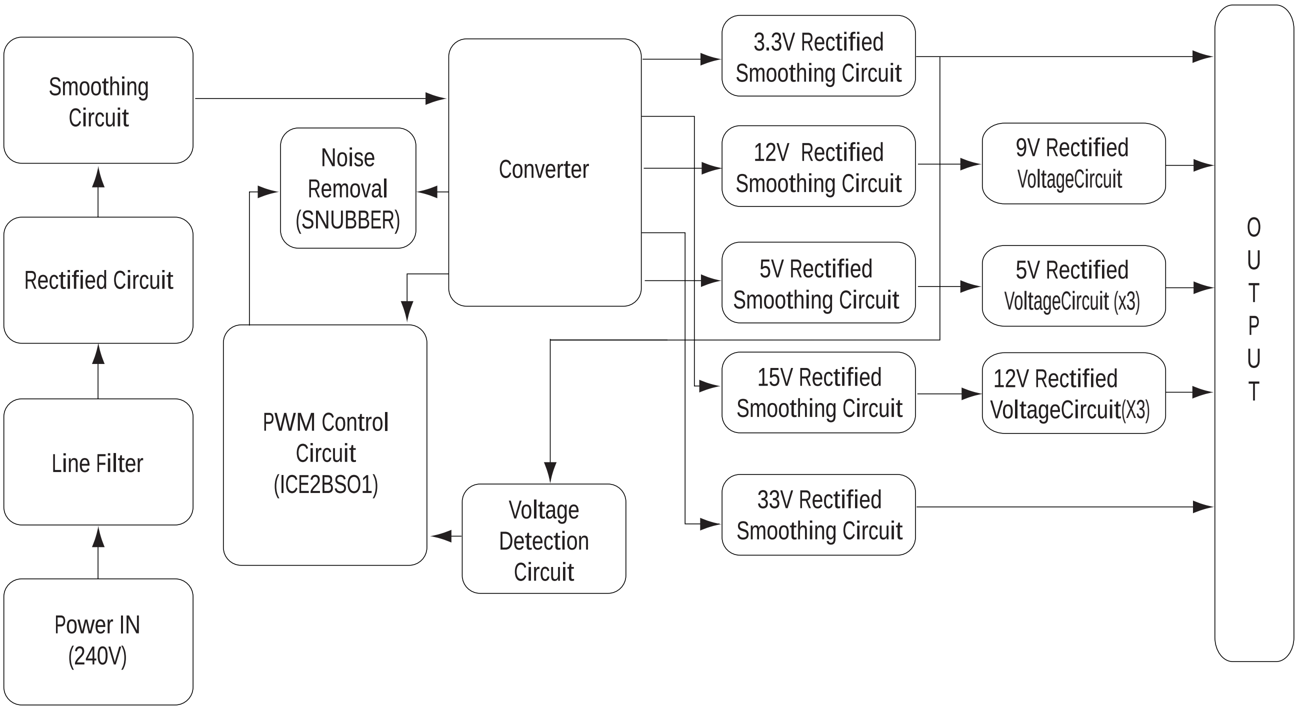

Smoothing Circuit
Rectified Circuit
Line Filter
Power IN (240V)
Noise Removal (SNUBBER)
Converter
PWM Control Circuit (ICE2BSO1)
Voltage Detection Circuit
3.3V Rectified Smoothing Circuit
12V Rectified Smoothing Circuit
5V Rectified Smoothing Circuit
15V Rectified Smoothing Circuit
33V Rectified Smoothing Circuit
9V Rectified VoltageCircuit
5V Rectified VoltageCircuit (x3)
12V Rectified VoltageCircuit(X3)
OUTPUT

Fig. 14-4

14-2 AV Codec

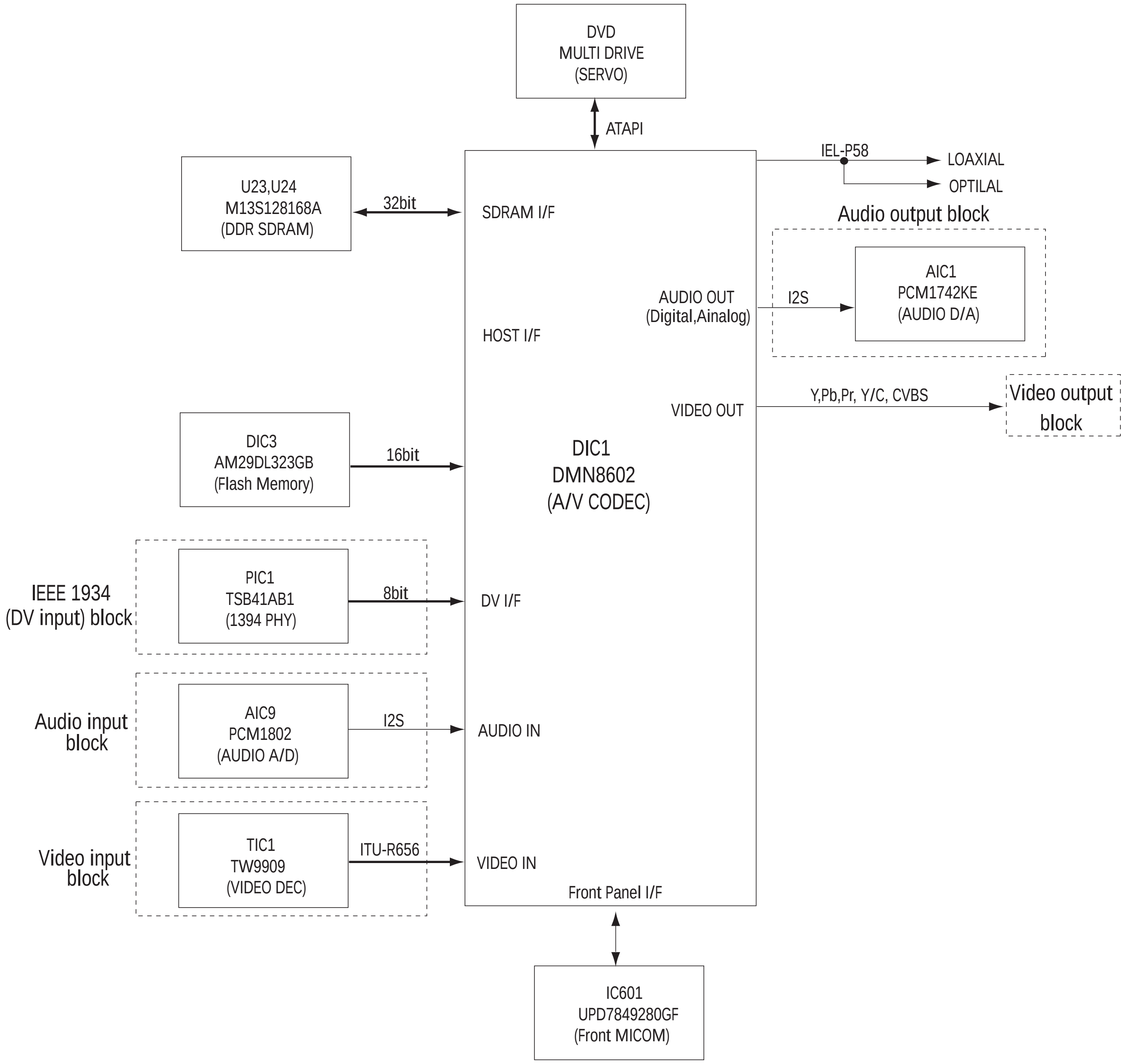

DVD
MULTI DRIVE
(SERVO)
ATAPI
U23,U24
M13S128168A
(DDR SDRAM)
32bit
SDRAM I/F
IEL-P58
LOAXIAL
OPTILAL
Audio output block
AIC1
PCM1742KE
(AUDIO D/A)
I2S
AUDIO OUT
(Digital,Ainalog)
HOST I/F
Y,Pb,Pr, Y/C, CVBS
VIDEO OUT
Video output block
DIC3
AM29DL323GB
(Flash Memory)
16bit
DIC1
DMN8602
(A/V CODEC)
IEEE 1934
(DV input) block
PIC1
TSB41AB1
(1394 PHY)
8bit
DV I/F
Audio input block
AIC9
PCM1802
(AUDIO A/D)
I2S
AUDIO IN
Video input block
TIC1
TW9909
(VIDEO DEC)
ITU-R656
VIDEO IN
Front Panel I/F
IC601
UPD7849280GF
(Front MICOM)

Fig. 14-5

- · Main system control
- · A / V Encoding / Decoding
- · Transcoding / rating
- · IEEE 1394 link layer function
- · ATAPI interface with DVD-Multi Drive
- · Analog Progressive / interlaced video output

14-2-1 DIC1 Processor Internal Architecture Diagram

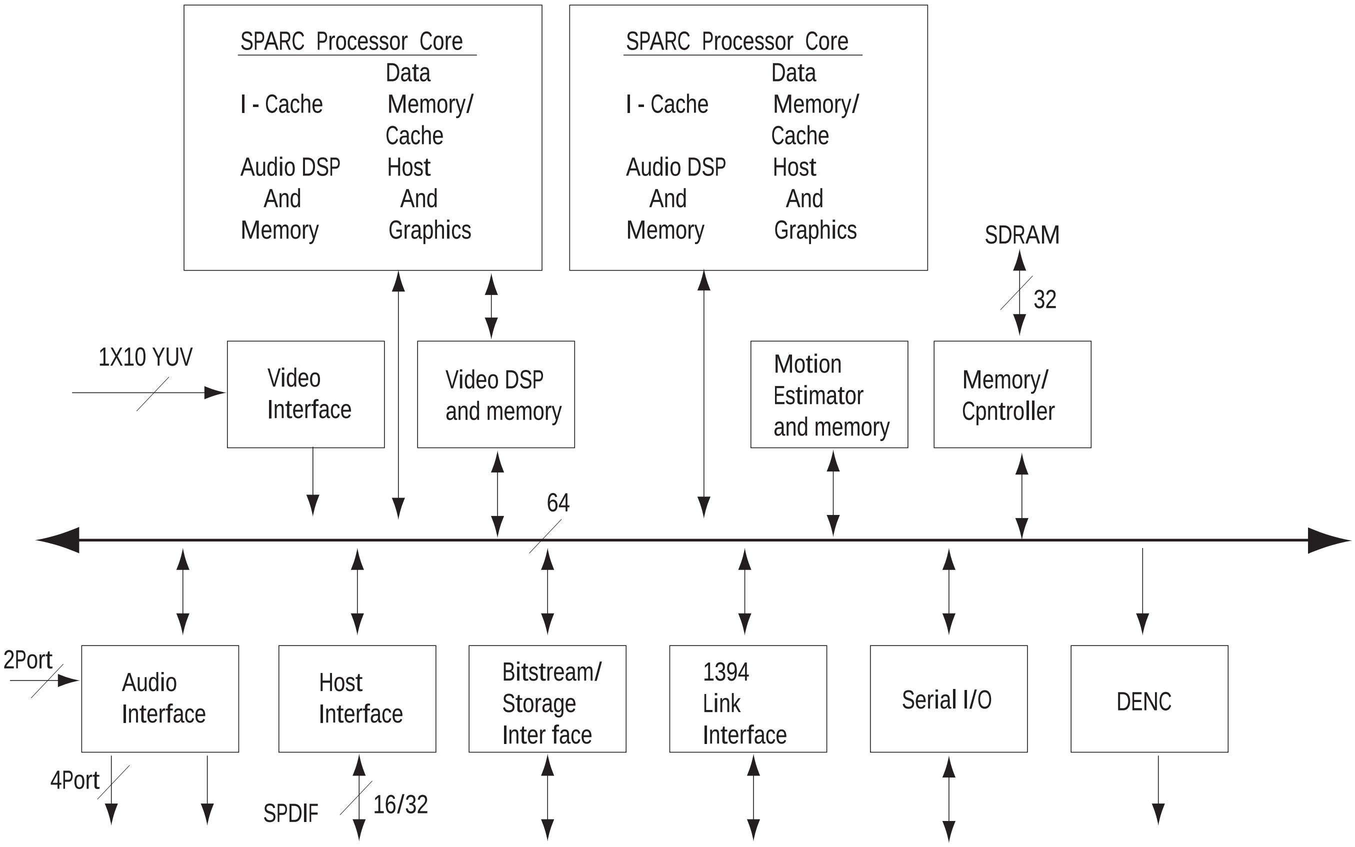

SPARC Processor Core
I - Cache
Data Memory/ Cache
Audio DSP And Memory
Host And Graphics
SPARC Processor Core
I - Cache
Data Memory/ Cache
Audio DSP And Memory
Host And Graphics
SDRAM
32
1X10 YUV
Video Interface
Video DSP and memory
Motion Estimator and memory
Memory/ Cpntroller
64
2Port
Audio Interface
Host Interface
Bitstream/ Storage Inter face
1394 Link Interface
Serial I/O
DENC
4Port
SPDIF
16/32

Fig. 14-6

14-2-2 A/V Processor (DIC1) Functional description

1) SPARC Processors

Two 32-bit SPARC processors, one dedicated to video processing and the other assigned general system tasks and audio processing, perform three classes of functions: system processing, audio processing, and high-level control flow and decision-making tasks for video processing. Optionally, they can also perform 2D graphics and host functions.

The DMN8602 also support multiple video inputs, windowed video and graphics with arbitrarily relocatable and resizable windows, letterbox, and side-by-side display of SD sources.

2) Host Interface

The host communication functions include initializing the DMN-8602 device, downloading software to the local SDRAM, sending commands, monitoring status, and downloading graphics data such as OSD bitmap.

3) Bitstream / Storage interface

◆ ATAPI Controller

ATAPI is an asynchronous, 120ns, 16-bit word interface commonly used to connect devices such as hard disks, CD / DVD ROMs, and DVD RAMs. All operations are initiated by reading / writing a set of ATAPI device registers through programmed input / output(PIO) data transfer. ATAPI has DMA commands for transferring long data. The ATAPI register address is defined by the output pins CS0, CS1, DA[2:0].

◆ The IEEE1394 interface can receive MPEG-2 transport stream or DV stream data contained in isochronous packets (IPs). The DMN-8602 device filters the packets by matching channel IDs. In the case of MPEG-2 transport streams, the DMN-8602 device performs descrambling on the data that is scrambled with 5C encryption. Software is responsible for transport section processing and demultiplexing.

4) Video Interface

◆ Video Input channel

The video input channel captures ITU-R BT.656-compliant 10-bit digital YUV component video stream from Video decoder chip(TIC1)

◆ Video Digital Encoder (DENC)

The NTSC / PAL digital video encoder (DENC) module converts a digital video data stream into NTSC or PAL composite or component video output.

The DMN-8602 DENC output can be in one of the following formats:

- Baseband composite NTSC (M) or PAL (B,D,G,H,I) analog video.
- Separate analog luma(Y) and chroma(C) output to support S-Video.
- Separate analog component video RGB or SMPTE YPbPr output.

5) Audio Interface

The serial audio input port receives uncompressed 16- to 24-bit serial digital audio data from external audio ADC(AIC9). An internally generated clock provides bit serial clocking of the data coming from external ADC

The serial audio output port sends uncompressed 16- to 24-bit serial digital audio data to external audio DAC(AIC1). An internally generated clock provides bit serial clocking of the data coming from external ADC

6) Serial I / O interface

◆ SPI interface

The SPI(Serial Peripheral Interface) port provides a bus for a serial interface with front panel micom(FIC1)

◆ IDC interface

The IDC bus is a simple, two-wire, bidirectional communication bus. The two signals, clock and data, are common to every device connected to the bus.

In this system, IDC bus is connected to EEPROM(DIC8) and Video Decoder(TIC1)

14-3 SERVO (DVP Multi Drive)

1) Pick-Up

Data in the disc is processed from the optical pick-up unit (OPU). OPU includes the Elantec chip (EL6912c) which is a highly integrated laser diode driver designed to support multi-standard writable optical drives. This chip also has an IV amplifier with concurrent read and write sampling. The architecture allows reprogramming of the timers to support different media DVD or CD standards, and different speed.

2) A-Chip

A chip is RF processor. This module performs RF signal processing which includes RFIP, RFIN, AGC, RF equalizer. This processor is able to detect tracking error, focus error and various signals such as CE, PE, SBAD, DEFECT, BCA, MIRROR, Wobble, TZC, RC, and RECD.

3) C-Chip

C-Chip is composed of DP1, PRML and WS.

First, the Data processor1 (DP1) performs EFM/EFM+ Demodulation and data is stored in the buffer memory in data processor2 (DP2). DVD data in this buffer is transferred to CSS/ATAPI through error-correction code

(ECC), descramble process and error detection code (EDC).

Second, WS performs the following processes.

①Delay compensation using Shift register

②Sample/Hold pulse generation

③I/V Gain Control

④Providing clock for RF chip

⑤OPC Control signal generation

Lastly, PRML completes the adaptive EQ/VD and Digital PLL.

4) D-Chip

D-Chip consists of Servo DSP, DP2 and 1Mbit memory. Servo DSP is dealing with controlling the servo-mechanism in DVD recorder. Servo-DSP has the following features.

①Bulit-in 10Bit ADC(8ch), DAC(3ch) and PWM(7ch)

②Step Motor Control Logic: Macro/Micro Step

③Track Counter: long distance velocity control direct seek

④Shock/Defect detection

⑤Header (DVD-RAM)/Land Pre-Pit (DVD-R/RW) Detection

⑥Several Servo Monitor Signal Detection

⑦RF IC Interface

⑧ Micom Interface

⑨Digital Servo Control of focus, tracking, sled and seek

⑩Disc Auto-Detection

⑪Automatic Adjustment of the offset, balance and gain of Focus and Tracking Signal

⑫Direct Seek with Velocity Control

⑬Step Motor Control: Macro Seek

⑭De-Track and Lens Shift Detection and Compensation

⑮Center Error Control

⑯DVD Layer Jump

⑰Tilt Detect and Compensation

DP2 performs High Speed ECC and CD DA Decoder.

5) ATAPI Controller

ATAPI (ATA Packet Interface) the standard interface protocol used to connect the CD / DVD Drive to IDE inter face. Data from the front-end is processed to back-end through this ATAPI protocol. Sanyo chip (LC98600CT-XB0) is utilized for ATAPI interface. LC98600CT-XB0 has the following features.

①ECC and EDC correction / addition for CD-ROM data
②Subcode decoding / encoding
③Spindle servo control
④CLV / CAV servo control using ATIP data
⑤ATIP decoding and CRC check functions
⑥ Providing random EFM output for PCA use
⑦High-accuracy write strategy signal output enabled (CD-R 52x)
⑧Buffer RAM can be accessed by the microcontroller through the LC98600CT-XB0
⑨Built-in ATA-PI(IDE) interface (supports Ultra DMA modes 0,1, and 2)
⑩52x decoding speed / 52x encoding speed supported with 33.8688Mhz
⑪Maximum transfer speed PIO mode: 16.6 MB / s (with IORDY), Ultra-DMA: 66MB / s (with DMARQ)
⑫User can freely set the CD main channel, C2 flag, and subcode areas in buffer RAM
⑬Built-in batch transfer function for transferring (CD main channel, C2 flag, etc., in a single operation)
⑭Built-in multi-transfer function (allows multiple blocks to be sent to the host automatically in a single operation)

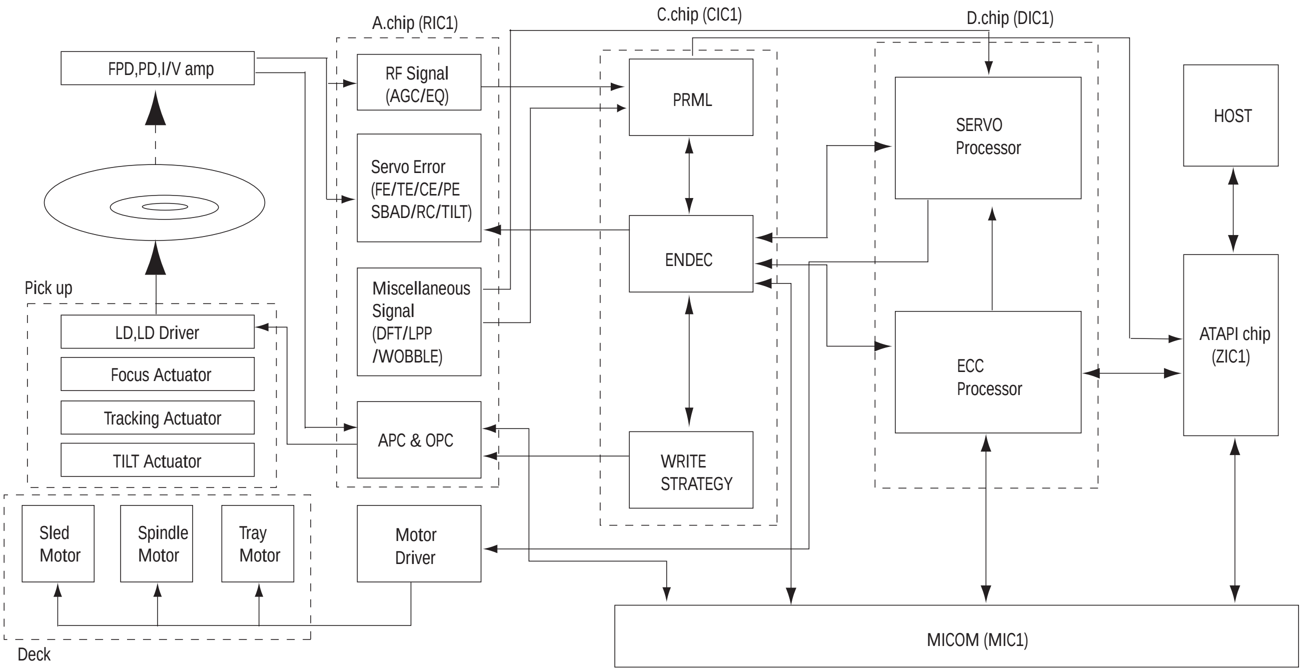

A.chip (RIC1)
C.chip (CIC1)
D.chip (DIC1)
FPD,PD,I/V amp
RF Signal (AGC/EQ)
Servo Error (FE/TE/CE/PE SBAD/RC/TILT)
Miscellaneous Signal (DFT/LPP /WOBBLE)
APC & OPC
PRML
ENDEC
WRITE STRATEGY
SERVO Processor
ECC Processor
HOST
ATAPI chip (ZIC1)
Pick up
LD,LD Driver
Focus Actuator
Tracking Actuator
TILT Actuator
Sled Motor
Spindle Motor
Tray Motor
Motor Driver
Deck
MICOM (MIC1)

Fig. 14-7

14-4 Video Input

14-4-1 Video Input Outline

D-VR15-S is the two Line Video input. Line 1 Video input is CVBS1 & S-Video1 at the Rear Panel. Line 2 Video input is CVBS2 at the Front Panel.
The analog Video signal select Line 1 or Line 2 by the IC601 (Front Micom).
TIC1 (Video Decoder) diverges from the 27MHz crystal, then generates ITU-R656 (10bits) and 27MHz clock.
TIC1 (Video Decoder) does closed caption, copy guard detect processing and A / D conversion of analog Video signal converted into 11bit Digital Video signal (ITU-R656 Format) is outputted via DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.

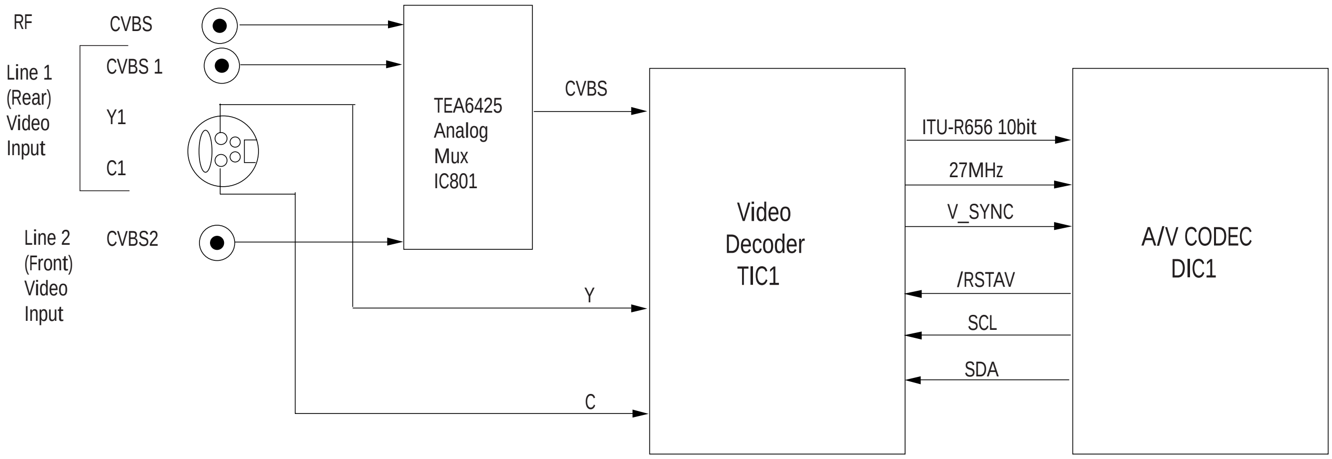

RF
CVBS
Line 1
(Rear)
Video
Input
CVBS 1
Y1
C1
Line 2
(Front)
Video
Input
CVBS2
TEA6425
Analog
Mux
IC801
CVBS
Y
C
Video
Decoder
TIC1
ITU-R656 10bit
27MHz
V_SYNC
/RSTAV
SCL
SDA
A/V CODEC
DIC1

Fig. 14-8

14-4-2 Analog Mux (TEA6425)

IC801 is Analog Mux.
As Pin 9, 10 of the IC801 are controlled by the Front Micom, IC801 select RF OF CVBS(Pin1) AV1 of CVBS[Pin6] and AV2 of CVBS[Pin 5].
The analog Video Signal of IC801 output is selected by the ic601 via TIC1(Video Decoder : TW9909) of analog Video input parts.

14-4-3 NTSC/PAL Video Decoder (TW9909 : Video Decoder)

The TIC1 (Video Decoder : TW9909) device is a high quality, single-chip digital video decoder that digitizes and decodes all popular baseband analog video formats into digital component video. The TIC1 (Video Decoder : TW9909) supports the analog-to-digital (A / D) conversion of component RGB and YPbPr signals, as well as the A / D conversion and decoding of NTSC, PAL and SECAM composite and S-video into component YCbCr.
This TIC1 (Video Decoder : TW9909) includes four 10-bit 30-MSPS A / D converters. and A / D conversion of 10bit analog Video signal converted into Digital Video signal (ITU-R656 Format) is outputted via
DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
The following output formats supply 10-bit 4:2:2 YCbCr to the DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
On CVBS and S-video inputs, the user can control video characteristics such as contrast, Brightness, saturation, and hue via an I2C DIC1 port [PIN V17, V18] interface.
The TW9906 decoder includes methods for advanced vertical blanking interval (VBI) data retrieval. The VBI data processor (VDP) slices, parses, and performs error checking on teletext, closed caption (CC), Copy Guard Detect Processing and other VBI data.

14-5 Video Output

14-5-1 Outline

DIC1 (MPEG2 Decoder & Encoder with video Encoder) diverges from the 13.5MHz crystal, then generates VSYNC and HSYNC.
DIC1 (MPEG2 Decoder & Encoder with video Encoder) does RGB encoding, copy guard processing and D/A conversion of 10bit Video signal converted into analog signal is outputted via amplifer of analog part.

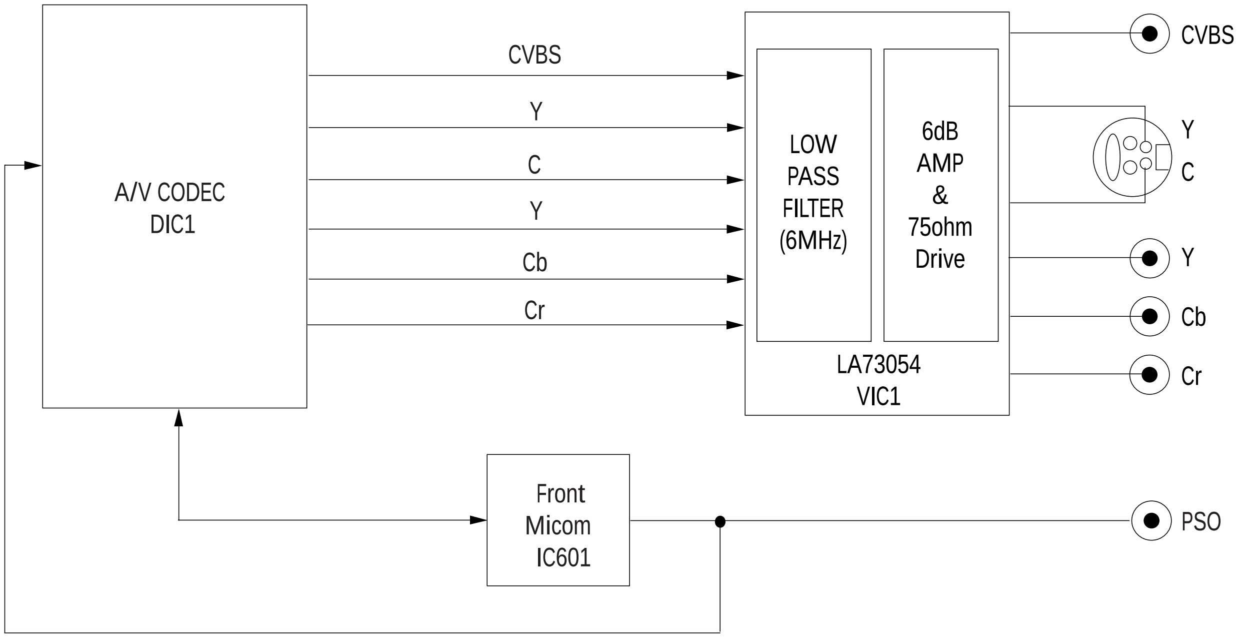

A/V CODEC
DIC1
CVBS
Y
C
Y
Cb
Cr
LOW
PASS
FILTER
(6MHz)
6dB
AMP
&
75ohm
Drive
LA73054
VIC1
CVBS
Y
C
Y
Cb
Cr
Front
Micom
IC601
PSO

Fig. 14-9

14-5-2 NTSC/PAL Digital

DIC1 inputted from pin E1 with 13.5MHz generates HSYNC and VSYNC which are based on video signal. DIC1 is synchronous signals with decoded video signal.
The above signals, which are CVBS (Composite Video Burst Synchronized), Y(S_Video), C(S_Video), Y(Component)/G(Green), Cr(component)/R(Red), Cb(component)/B(Blue), are selectively outputted 480i (interlaced Video Output), 480P(progressive Video Output) by the Pront button DiC1 adopts 10bit D/A converter. DIC1 perform video en-coding as well as copy protection.

14-5-3 Amplifier (LA73054)

VIC1 is 6dB amplifier.

Based on CVBS signal, the final output level must be 2Vpp without 75ohm terminal resistance.

Because the level of video encoder output is only 1Vpp, the level is adjusted with the special amplifier.

When mute of pin 3 is high active, if the pin is floating and connect to power, the output signal is never outputted.

CVBS, Y, C, Y(R), Cb(B), Cr(R) outputted from video encoder are inputted to VIC1 [Pin2, 6, 8, 11, 14, 16] respectively.

The signal to which gain is adjusted by amplifier is outputted from jack via 75ohm Resistance (VR30,11,32,33,34,53,54,55).

14-6 Audio

14-6-1 Input Block

D-VR15-S has two stereo line input terminals. and internal TV-audio from RF Tuner Block. These three Analog audio signal source are converted to digital data by Input Block.
Input Block has a Multiplexer (IC802), Input Filter (AIC81, AIC82), and A/D converter (AIC9).
IC802 change it's output by selection control signal from IC601 (Front Micom).
The output signal of IC802 are filtered by OP-Amp (AIC81, AIC82).
AIC81 (L-ch) have two op-amp in each.

14-6-2 Output Block

D-VR15-S has two stereo analog line out terminal, and two digital output terminal.
Decoded signal by DIC1 is inputted to AIC1 (D/A Converter), then filtered and amplified by AIC4 (OP-Amp).
And the digital audio signal (IEC-958) is drived by AIC3 inverter and ouputted in Optical/Coaxial (S/PDIF) terminal.

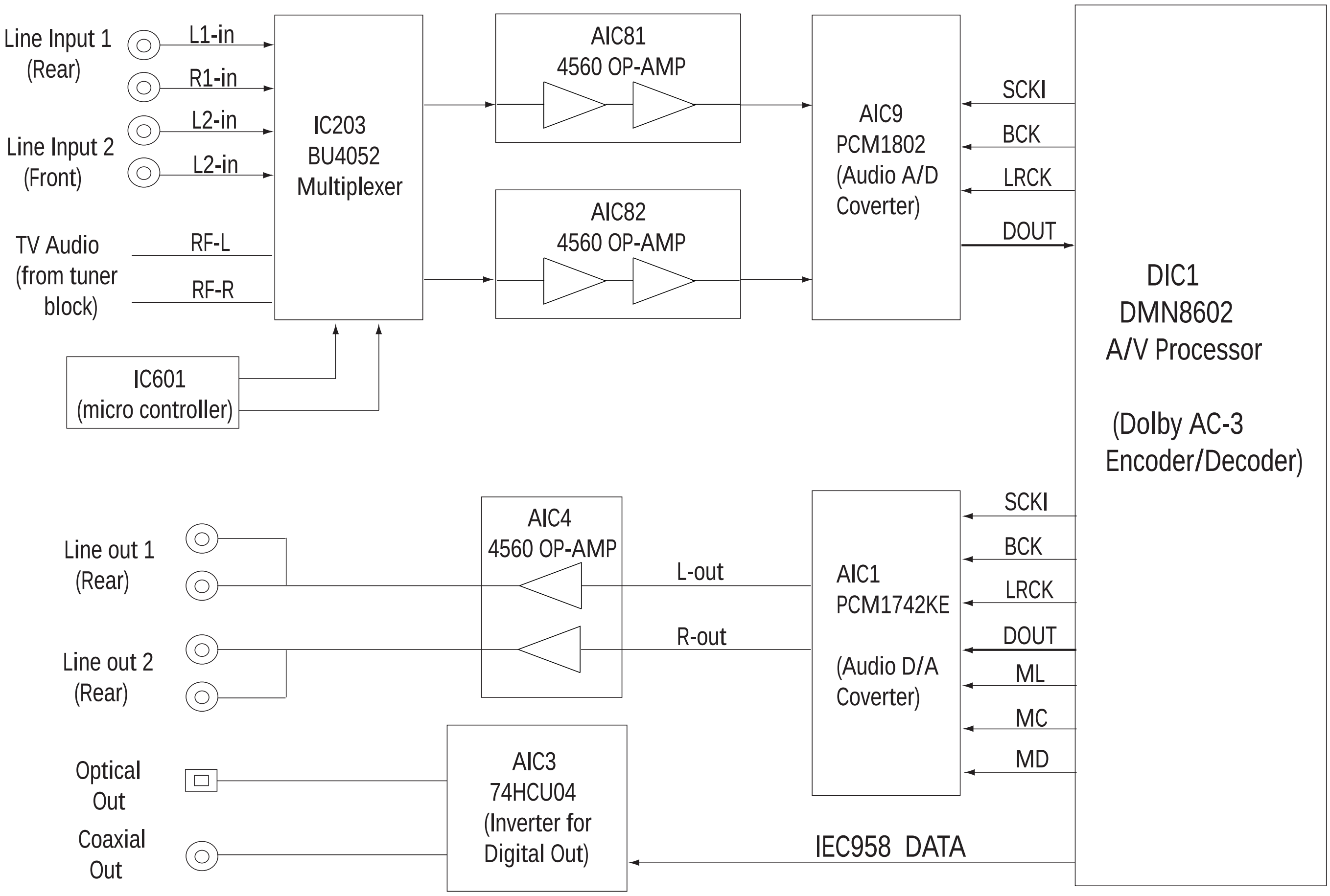

Line Input 1 (Rear)
L1-in
R1-in
L2-in
L2-in
Line Input 2 (Front)
TV Audio (from tuner block)
RF-L
RF-R
IC203 BU4052 Multiplexer
IC601 (micro controller)
AIC81 4560 OP-AMP
AIC82 4560 OP-AMP
AIC9 PCM1802 (Audio A/D Coverter)
SCKI
BCK
LRCK
DOUT
DIC1 DMN8602 A/V Processor
(Dolby AC-3 Encoder/Decoder)
Line out 1 (Rear)
Line out 2 (Rear)
AIC4 4560 OP-AMP
L-out
R-out
AIC1 PCM1742KE (Audio D/A Coverter)
SCKI
BCK
LRCK
DOUT
ML
MC
MD
Optical Out
Coaxial Out
AIC3 74HCU04 (Inverter for Digital Out)
IEC958 DATA

Fig. 14-10

14-7 Tuner

1) Low Pass Filter & High Pass Filter
   This consists of IF trap circuit and UHF & VHF separation circuit. If the input signal is IF (45.75MHz), this filter
   prevents interference.

2) Single tune
   This consists of a filter circuit, RF AMF, impedance conversion circuit, image trap and a single tuning circuit. It prevents noise and other interference signals. It is very important part which improves NF (noise figure) and prevents the various of spurious signals.

3) RF AMF
   RF AMF is made of FET (Field Effects Transistor). It is controlled by AGC coming from IF DEMOD block.

4) Double tune
   It consists of a double tuning circuit to improve characteristic of rejection that results in a better band characteristic.

5) Mixer IC (Mixer, OSC, PLL)
   It consists a VHF and UHF OSC and Mixer circuit. We applied mixer to make better characteristic of rejection, it shows especially various beat characteristic.

6) PLL IC
   The PLL IC plays a role selection of Tuner channel. It was built-in three wire PLL IC, charge pump and band driver.
   The minimum of step frequency is 31.25KH z.

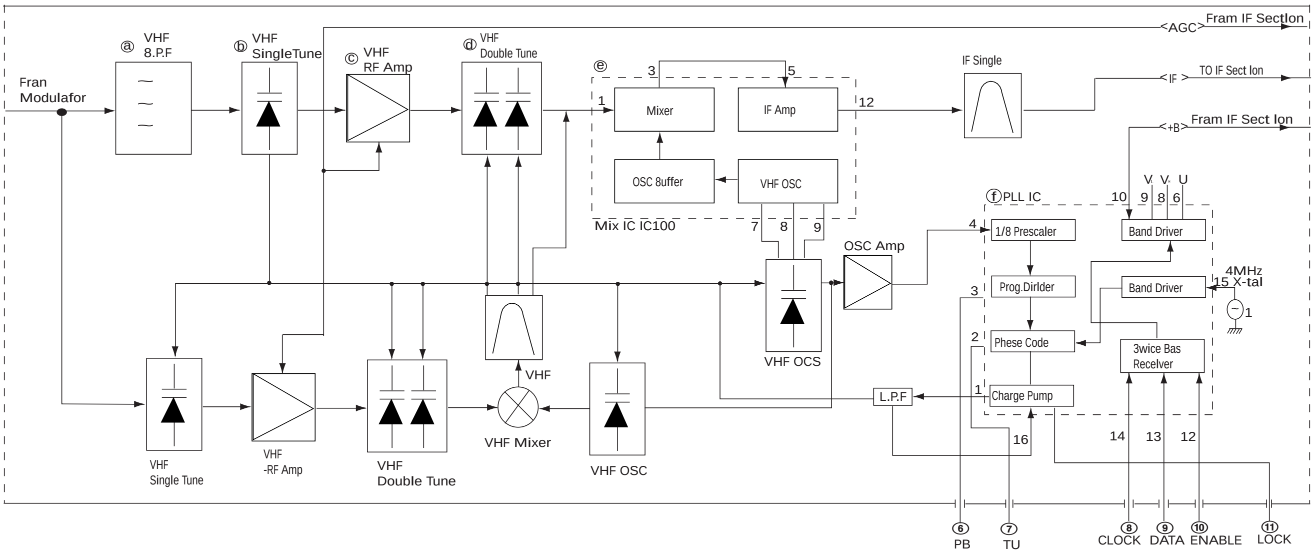

ⓐ VHF 8.P.F
ⓑ VHF SingleTune
ⓒ VHF RF Amp
ⓓ VHF Double Tune
ⓔ
Fran Modulafor
3
5
1
Mixer
IF Amp
12
OSC 8uffer
VHF OSC
Mix IC IC100
7
8
9
IF Single
<AGC>
Fram IF SectIon
<IF >
TO IF Sect Ion
<+B>
Fram IF Sect Ion
V_L V_H U
ⓕ PLL IC
10 9 8 6
4
1/8 Prescaler
Band Driver
OSC Amp
Prog.Dirlder
Band Driver
4MHz
15 X-tal
1
3
2
Phese Code
3wice Bas Recelver
1
Charge Pump
L.P.F
16
14 13 12
VHF OCS
VHF
VHF Single Tune
VHF -RF Amp
VHF Double Tune
VHF Mixer
VHF OSC
⑥ PB
⑦ TU
⑧ CLOCK
⑨ DATA
⑩ ENABLE
⑪ LOCK

Fig.14-11

14-8 IF

1) SAW FILTER
It passes only needed band of the signal that is converted to IF frequency and decrease the others band to minimize the effect of adjacent channel.

2) RF AGC Control
It used adjusting to determine RF AGC working point in tuner.

3) VCO Tank
When VCO tank detects PLL, it makes the signal which sets a standard.

4) AFT (Auto Frequency Tuning)
AFT automatically controls the oscillator frequency in the tuner, so that it retains a constant level.
It is a quadrature detection type. The carrier, which is detected from video det is directly input to AFT.
The 90 degree delayed phase signal is input at the same time to AFT and, the results come out.

5) IF AMP
IF signal , which is selected in Saw filter, is amplified in IF amp frequency enough to be detected. The IF amp has parallel inputs & outputs structure.

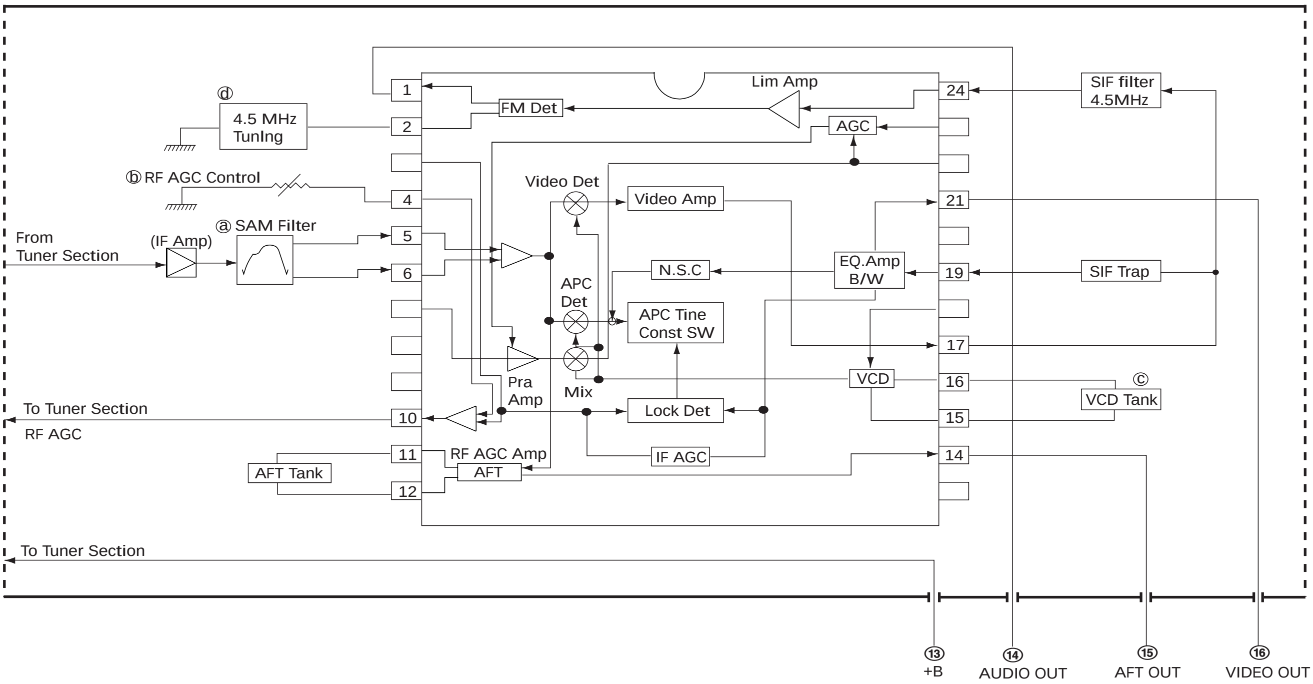

ⓓ
4.5 MHz Tuning
ⓑ RF AGC Control
ⓐ SAM Filter
From Tuner Section
(IF Amp)
To Tuner Section
RF AGC
AFT Tank
To Tuner Section
1
2
4
5
6
10
11
12
FM Det
Lim Amp
AGC
Video Det
Video Amp
N.S.C
APC Det
APC Tine Const SW
EQ.Amp B/W
Pra Amp
Mix
Lock Det
VCD
RF AGC Amp
AFT
IF AGC
24
21
19
17
16
15
14
SIF filter 4.5MHz
SIF Trap
ⓒ
VCD Tank
⑬ +B
⑭ AUDIO OUT
⑮ AFT OUT
⑯ VIDEO OUT

Fig. 14-12

14-9 VCR System Control

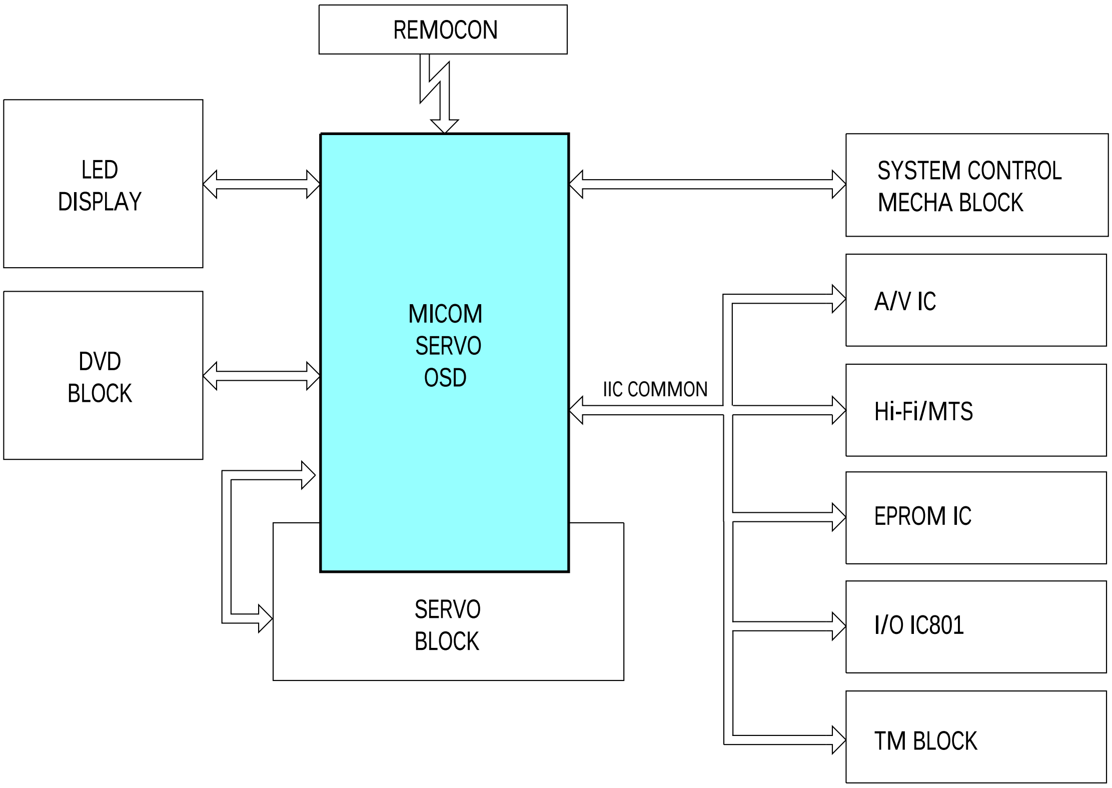

REMOCON
LED DISPLAY
DVD BLOCK
MICOM SERVO OSD
SERVO BLOCK
SYSTEM CONTROL MECHA BLOCK
IIC COMMON
A/V IC
Hi-Fi/MTS
EPROM IC
I/O IC801
TM BLOCK

Fig. 14-11 Micom Block Diagram

(1) Outline

The system control circuit inputs the commands given by the operator to set the mechanism and circuit to the commanded mode. The circuit also inputs the detected output from the tape and mechanism protection sensor and protects the VCR and tape against abnormal operation.
Fig. 14-11 is a simplified system control block diagram.
The system control is performed by 4 control sections. (System and timer control, Servo control, F/S Tuner, On Screen Display).

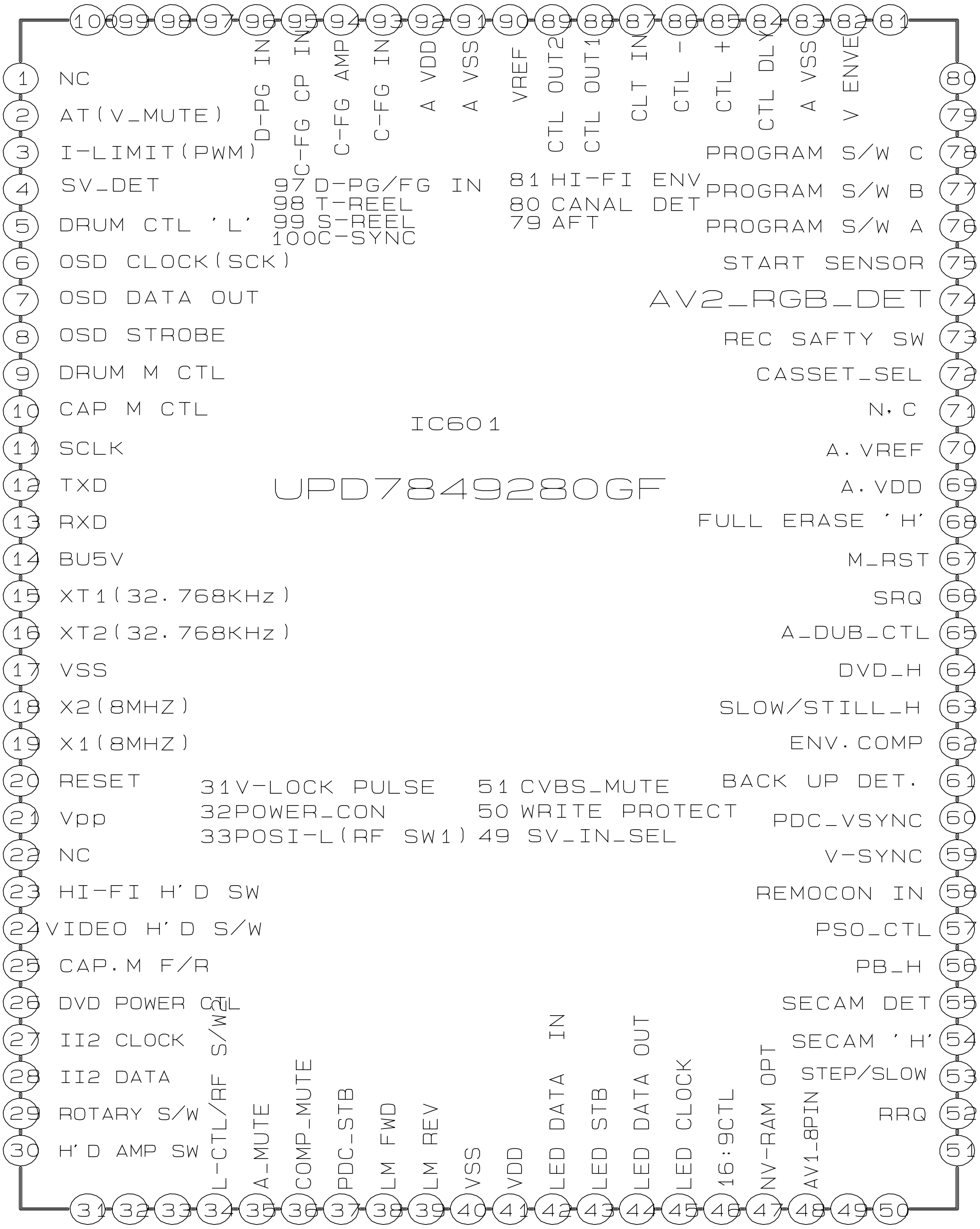

IC601
UPD784928OGF
100
99
98
97
96 D-PG IN
95 C-FG CP IN
94 C-FG AMP
93 C-FG IN
92 A VDD
91 A VSS
90 VREF
89 CTL OUT2
88 CTL OUT1
87 CLT IN
86 CTL -
85 CTL +
84 CTL DLY
83 A VSS
82 V ENVE
81
97 D-PG/FG IN
98 T-REEL
99 S-REEL
100 C-SYNC
81 HI-FI ENV
80 CANAL DET
79 AFT
1 NC
2 AT(V_MUTE)
3 I-LIMIT(PWM)
4 SV_DET
5 DRUM CTL 'L'
6 OSD CLOCK(SCK)
7 OSD DATA OUT
8 OSD STROBE
9 DRUM M CTL
10 CAP M CTL
11 SCLK
12 TXD
13 RXD
14 BU5V
15 XT1(32.768KHz)
16 XT2(32.768KHz)
17 VSS
18 X2(8MHZ)
19 X1(8MHZ)
20 RESET
21 Vpp
22 NC
23 HI-FI H'D SW
24 VIDEO H'D S/W
25 CAP.M F/R
26 DVD POWER CTL
27 II2 CLOCK
28 II2 DATA
29 ROTARY S/W
30 H'D AMP SW
80
79
78 PROGRAM S/W C
77 PROGRAM S/W B
76 PROGRAM S/W A
75 START SENSOR
74 AV2_RGB_DET
73 REC SAFTY SW
72 CASSET_SEL
71 N.C
70 A.VREF
69 A.VDD
68 FULL ERASE 'H'
67 M_RST
66 SRQ
65 A_DUB_CTL
64 DVD_H
63 SLOW/STILL_H
62 ENV.COMP
61 BACK UP DET.
60 PDC_VSYNC
59 V-SYNC
58 REMOCON IN
57 PSO_CTL
56 PB_H
55 SECAM DET
54 SECAM 'H'
53 STEP/SLOW
52 RRQ
51
31 V-LOCK PULSE
32 POWER_CON
33 POSI-L(RF SW1)
51 CVBS_MUTE
50 WRITE PROTECT
49 SV_IN_SEL
31
32
33
34 L-CTL/RF S/W2
35 A_MUTE
36 COMP_MUTE
37 PDC_STB
38 LM FWD
39 LM REV
40 VSS
41 VDD
42 LED DATA IN
43 LED STB
44 LED DATA OUT
45 LED CLOCK
46 16:9CTL
47 NV-RAM OPT
48 AV1_8PIN
49
50

Fig. 14-12 IC601 Block Diagram

(2) Mechanism/Circuit Control

When the u-COM inputs operator's commands via the key input or remote input, the mechanism and circuits are set to the command mode. This function controls mechanism / servo section and audio / video processing section.

1) Cassette Loading Control
Controls loading and ejection of a cassette and determines the mechanism operation mode; tape loading / unloading, action / release of various breaks, tension, take up mechanism etc.

2) Tape Protection Sensor Monitoring
Detects abnormal operation in tape using the supply and take up end sensor, reel sensor and SW 30Hz pulse for drum rotation.

3) Capstan Motor Control
Determines the tape speed and direction, fast forwards and rewinds the tape etc.

4) Tape Counter Control
Counts the control pulses on the control track, picked up by the control head and shows it on the digital multidisplay.

5) Servo Control
Determines the operation mode of the servo circuit. Control the speed of drum and capstan motor, and then Control the phase of drum and capstan motor.

6) Record Safety Tap Detection
Detects the safety tab on the rear of a cassette to prevent a prerecorded program from being erased.

7) Loading/Unloading control
Controls a series of loading / unloading operation after the u-COM judges the operation mode and sets the mechanism to suitable mode. Fig. 14-13 show correlation between u-COM and peripheral components during the loading / unloading operation.
The mechanism state switch (PROG. SW) detects the mechanism position. When the driving gear is turned by the loading motor, the switch driving slider traces the groove, and this switch stops at the correct position corresponding to each mode. In other words, the u-COM judges the present mechanism state from the PROG SW after receiving the mode data, then it outputs the loading motor and capstan motor control signals.
This continues until the PROG SW reaches the correct state by the u-COM.

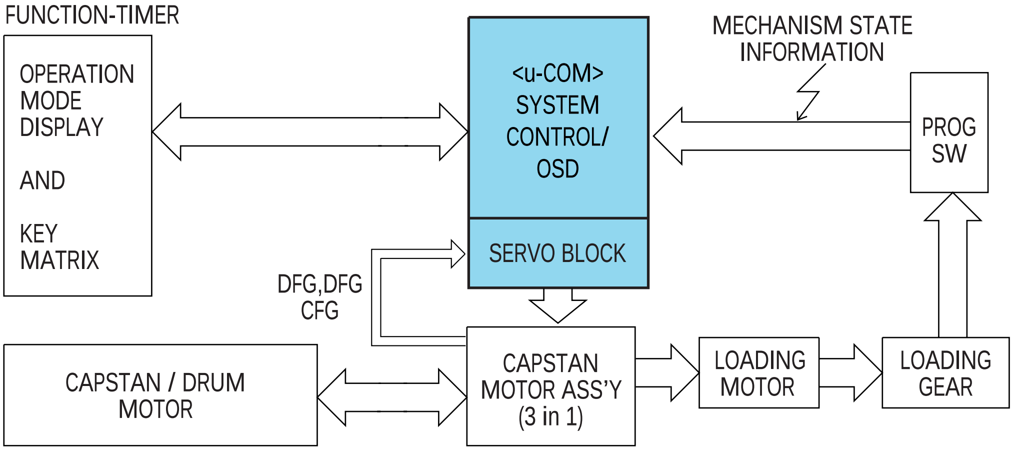


Fig. 14-13 The Relationship Between u-COM, Capstan, Cylinder and Loading Motor

(3) Program SW Input

The mechanism state for each mode is shown in table 1 below. The mechanism state is classified into position, and correlation between the switch position and mechanism state is shown in table 1, also.

Table 1 : Prog. SW State in Each Mode

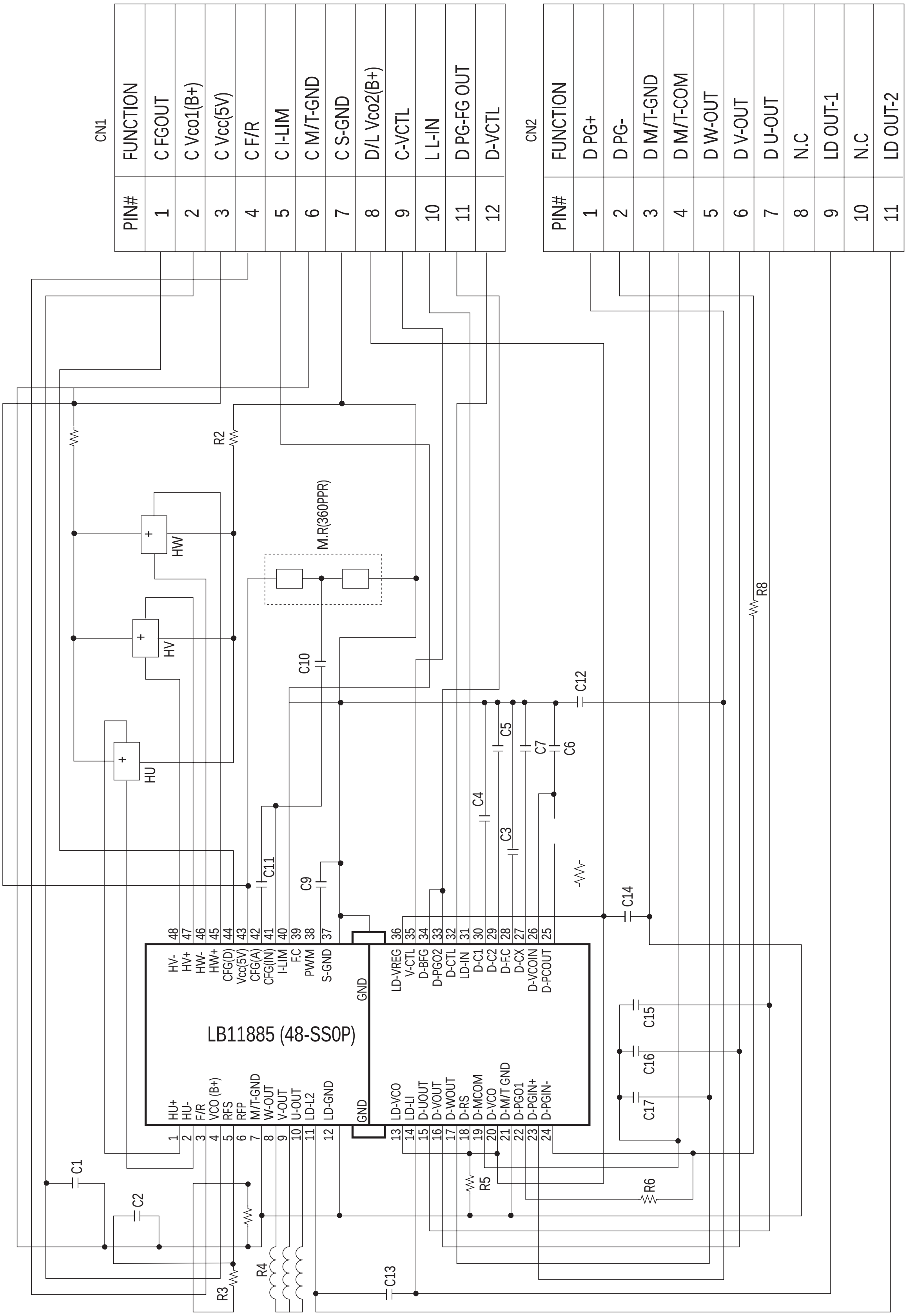
POSION	CAM S/W			START	ACTION MODE
	A	B	C	SEN	
STANBY	0	0	0	0	Eject
POWER OFF	0	0	0	1	Unload POWER OFF
LOADING START	0	0	0	1	(Tape loading start point)
LOADING END	1	0 1	1	1	(Tape loading end point)
REV	1	1	0	X	Reverse picture search, reverse SLOW
PLAY	0	1	0	X	Play, Rec, F-PS, Still, SLOW, F-ADV
STOP 1	0	0	1	1	Stop (Play position 5 Min. over)
STOP 2	0	0	1	X	(MAIN Break ON MODE)
FF/REW 1	1	0	0	X	High speed Rew, Low speed FF
FF/REW 2	0	1	1	X	High speed FF, Low speed Rew

(4) Motor Control

In case of Scorpio-2 Deck, Loading Motor Drive IC lies in Capstan Motor, not like Scorpio-1 Deck.
In detail, Capstan Motor Drive IC is designed to drive Loading Motor + Capstan Motor + Cylinder Motor in one IC. (See Fig. 14-14)

Table 2 : Motor Control Logic

CN604-PIN10	MOTOR
0 ~ 1V	Reverse
2 ~ 3V	Stop
4 ~ 5V	Forward


CN1
CN2
LB11885 (48-SS0P)
M.R(360PPR)
HW
HV
HU
R2
R3
R4
R5
R6
R8
C1
C2
C3
C4
C5
C6
C7
C9
C10
C11
C12
C13
C14
C15
C16
C17
GND
GND
48 HV-
47 HV+
46 HW-
45 HW+
44 CFG(D)
43 Vcc(5V)
42 CFG(A)
41 CFG(IN)
40 I-LIM
39 F.C
38 PWM
37 S-GND
36 LD-VREG
35 V-CTL
34 D-BFG
33 D-PGO2
32 D-CTL
31 LD-IN
30 D-C1
29 D-C2
28 D-F.C
27 D-CX
26 D-VCOIN
25 D-PCOUT
1 HU+
2 HU-
3 F/R
4 VCO (B+)
5 RFS
6 RFP
7 M/T-GND
8 W-OUT
9 V-OUT
10 U-OUT
11 LD-L2
12 LD-GND
13 LD-VCO
14 LD-LI
15 D-UOUT
16 D-VOUT
17 D-WOUT
18 D-RS
19 D-MCOM
20 D-VCO
21 D-M/T GND
22 D-PGO1
23 D-PGIN+
24 D-PGIN-

CN1

PIN#	FUNCTION
1	C FGOUT
2	C Vco1(B+)
3	C Vcc(5V)
4	C F/R
5	C I-LIM
6	C M/T-GND
7	C S-GND
8	D/L Vco2(B+)
9	C-VCTL
10	L L-IN
11	D PG-FG OUT
12	D-VCTL

CN2

PIN#	FUNCTION
1	D PG+
2	D PG-
3	D M/T-GND
4	D M/T-COM
5	D W-OUT
6	D V-OUT
7	D U-OUT
8	N.C
9	LD OUT-1
10	N.C
11	LD OUT-2

Fig. 14-14 Loading Motor + Capstan Motor + Cylinder Motor Block Diagram

(5) Stop Mode

The VCR enters the stop mode when the stop button is pressed during playback, record, rewind and fast forward mode. When trouble is detected, the VCR enters the stop mode to protect the tape and mechanism or when the tape reaches the end, etc.

- State Input ;
  Power switch on position.
  Stop button operation in all mode, except for timer recording and XPR.

(6) Play Mode

- State input ; Play button operated in stop, fast forward, rewind, forward search, reverse search, still mode, etc.,
- Indication output ;
  “PLAY” lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H

(7) Trick Play Mode

Trick play modes are classified into forward search, reverse search, still, slow and frame advance.
Audio signal is muted by pin 32 of IC601 (A.MUTE). V-lock is controlled by pin 24 of IC601.

(8) Forward Search Mode

7 Times play speed search in SP and SLP, 21 times play speed search in SLP.

- State input ; Press the fast forward button on the VCR front panel or the remote control in play or still mode.
- Indication output ; “FPS ” display in LED Module during 3 seconds.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H
  IC601 Pin 32 (A.MUTE) : H

(9) Reverse Search Mode

7 times play speed reverse search in SP, 21 times play speed reverse search in SLP.

- State input ;
  Press the rewind button on the VCR front panel or on the remote control in play or still mode.
- Indication output ;
  “RPS” display in LED Module during 3 seconds.
- Output ;
  IC601 Pin 46 (CAP F/R) : L
  IC601 Pin 32 (A.MUTE) : H

(10) Slow Mode

- State input ; Press “▶II “ button and then press “▶▶“ button on the remote control.
  The slow speed can be changed when “▶▶“ or “◀◀“ button is pressed.
- Indication output ; “SLOW” lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H
  IC601 Pin 32 (A.MUTE) : H

(11) Play/Still Mode

The same track is traced by the video heads.

- State input ; Press "▶II" button in play modes.
- Indication output ; "STILL" display in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H
  IC601 Pin 32 (A.MUTE) : H

(12) Record Mode

Must use a cassette with the safety tab.

Index signal is recorded on the control track of the tape at the start of recording.

- State input ;
  Press the record button during stop mode and record pause mode or at the preset time reached in the timer record mode. Press the REC button in stop mode.
- Indication output ;
  "REC" lights in LED Module in normal record mode, "0:30, 1:00, 1:30, 2:00, 3;00 or 4:00" display in timer XPR modes.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H

(13) Record Pause Mode

The pinch roller is released from the capstan shaft in a moment.

The brake is applied to the take up reel to prevent tape slack during the record pause mode.

- State input ; Press "II" button in the record mode.

Note : Inoperative during recording and XPR mode.

- Indication output ; "PAUSE"display in LED Module.

(14) Fast Forward Mode

Tape fast forward operation using capstan motor.

- State input ; Press the rewind button in the stop or fast forward modes.
- Indication output ; "FF" lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H

(15) Rewind Mode

Tape rewind operation using the capstan motor.

- State input ; Press the rewind button in the stop or fast forward modes.
- Indication output ; "REW" lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : L

(16) Rewind Shut-Off Mode

Tape rewind operation then power off mode.

- State input ; Press the power button in the rewind mode.

(17) Trouble Detection

The trouble detection circuits are provided to protect from damage (Fig. 14-15). The reel lock sensor detects incorrect rotation of supply and take up reel. The reel lock sensor consists of the disk and photo sensor installed at the bottom of the reel disk. the disk has 6 or 8 shielder parts and the photo sensor consists of the LED and photo transistor assembly. When the light is shielded by the the shielder or enters the photo transistor, the output is obtained from the photo sensor. IC601 measures the period of the pulse. When it is 4 seconds or more during record / play, the VCR enters the reel emergency mode.
The VCR maintains the unload-power-on state in the reel emergency.

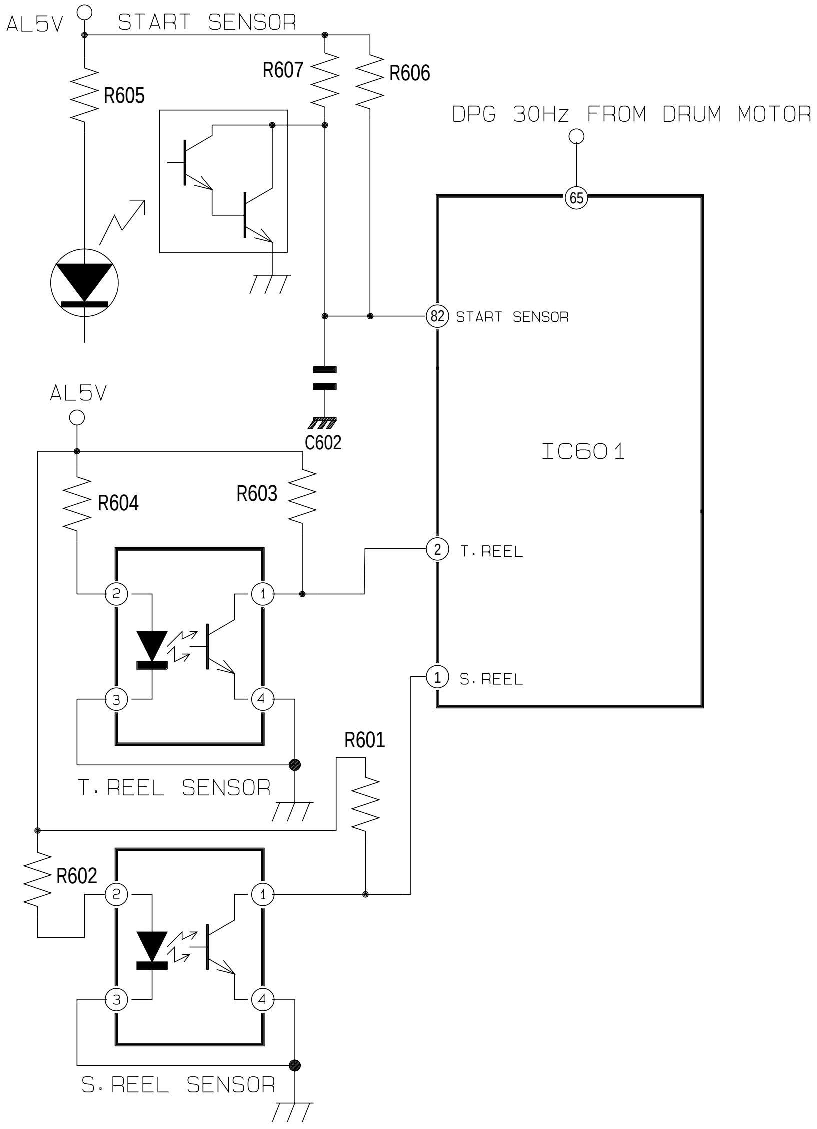

AL5V
START SENSOR
R607
R606
R605
DPG 30Hz FROM DRUM MOTOR
65
82
START SENSOR
AL5V
C602
IC601
R604
R603
2
T. REEL
1
S. REEL
2
1
3
4
R601
T. REEL SENSOR
R602
2
1
3
4
S. REEL SENSOR

Fig. 14-15 Reel and Cylinder Lock T.END/S.END Sensor

(18) Cylinder Lock Sensor

If the frequency of D-FG is less than 230Hz or more than 430Hz during 500msec, and such situation occurs 3 times contined, micom makes the VCR drum emergency.

(19) Tape End Sensor

When end sensor detects the transparent section at the end of tape, the VCR enters auto rewind mode, except during timer recording and OTR mode. The cassette LED emits light through the transparent section of tape to the photo transistors, which are installed at both ends of the cassette. When start sensor detects the start section of the tape during reverse search and rewind, the VCR automatically goes to stop mode.

(20) Tape Counter Control

Fig. 14-16 is a simplified diagram of the tape counter control circuit. The tape counter in the u-COM counts the control pulses derived from control head. The control signal on the control track of the tape is picked up by the control head and supplied to pins 74, 75 of IC601. The control pulse is amplified by the u-COM IC. The u-COM determines the tape direction so the counter counts up when the "CAP F/R"signal is Hi and the counter counts down when the "CAP F/R" signal is Low. By counting the control pulse, the counter data is supplied to the VF display. Counter displays the time and it is increased or decreased by one minute after counting 1800 control pulses. Counter mode is switched to clock mode when the display button is pushed or when the VCR goes to power off mode. When the Clear button is pressed, the counter is reset to "00 : 00".
The tape counter has a memory stop function.

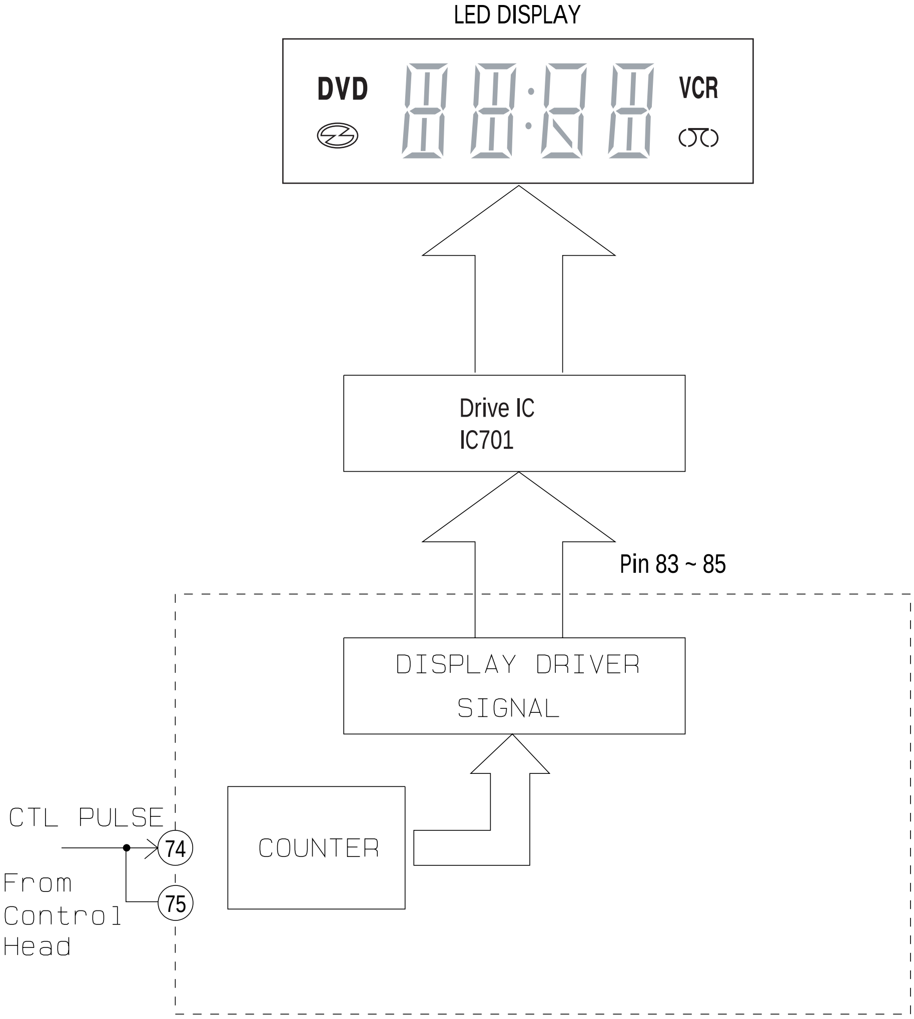

LED DISPLAY
DVD
VCR
Drive IC
IC701
Pin 83 ~ 85
DISPLAY DRIVER
SIGNAL
CTL PULSE
74
75
From
Control
Head
COUNTER

Fig. 14-16 Counter Display

(21) Timer/OTR Control

The timer can preset 12 programs in one month including daily and weekly programs.
Express recording lets the operator record up to 4 hours without programming the timer.

(22) Clock Display

The clock generator inside of the u-COM counts the oscillation signal of XT601 for the timer clock data.

(23) Power Failure Detection

u-COM goes to the power failure mode when the 88 port is lower than 4/5 of AD Vcc level.

(24) 4H'D Control

During trick play (still,slow,F-advance), it is necessary to control pre-amp,video circuit. the micom control pin 98 (C-ROTARY), pin 99 (HD-AMP) of the IC601 during PB period in Slow mode.
These port is applied to video IC to operate the trick play.

14-10 VCR Servo

(1) Outline

The servo system is divided into three loops. The cylinder servo controls the rotation of video heads, the capstan servo controls the tape speed, and the tension. In addition it’s necessary to control cylinder motor, especially during trick play in 4H’D models. The tension servo maintains the tape tension constant: it keeps the compression strength of tape against the video heads at the optimum level so that a stable RF signal is produced during recording and playback. The tension servo operation is entirely mechanical. The cylinder servo loop controls the phase and speed of the cylinder motor. The speed is kept at a constant 1800 RPM and the phase determines the mechanical position relative to the vertical Sync signal. The capstan servo loop controls the phase and speed of the capstan motor so that the video head can trace the video track correctly. It keeps tape speed constant according to the mode (SP, SLP)during playback and recording.

Table 3 : Servo System Signal

MOTOR	SYSTEM	MODE	REFERENCE SIGNAL	COMPARISON SIGNAL
CYLINDER (VIDEO HEAD) (4H' D)	PHASE	REC	V-SYNC	SW 30Hz
		PB	REF30Hz	
	SPEED	COMMON	8MHz	CYLINDER FG(720Hz)
	SPEED& PHASE	TRICK PLAY (STILL. SLOW)	MICOM CONTROL CYLINDER SPEED TO MATCH H-SYNC SPEED	
CAPSTAN (4H' D)	PHASE	REC	DIVIDED CFG PULSE	REF 30Hz
		PB	CTL 30Hz	
	SPEED	COMMON	8MHz	CAPSTAN FG
	SPEED& PHASE	TRICK PLAY (STILL. SLOW)	MICOM CONTROL CAPSTAN DRIVE SIGNAL WITH CAP C.L	

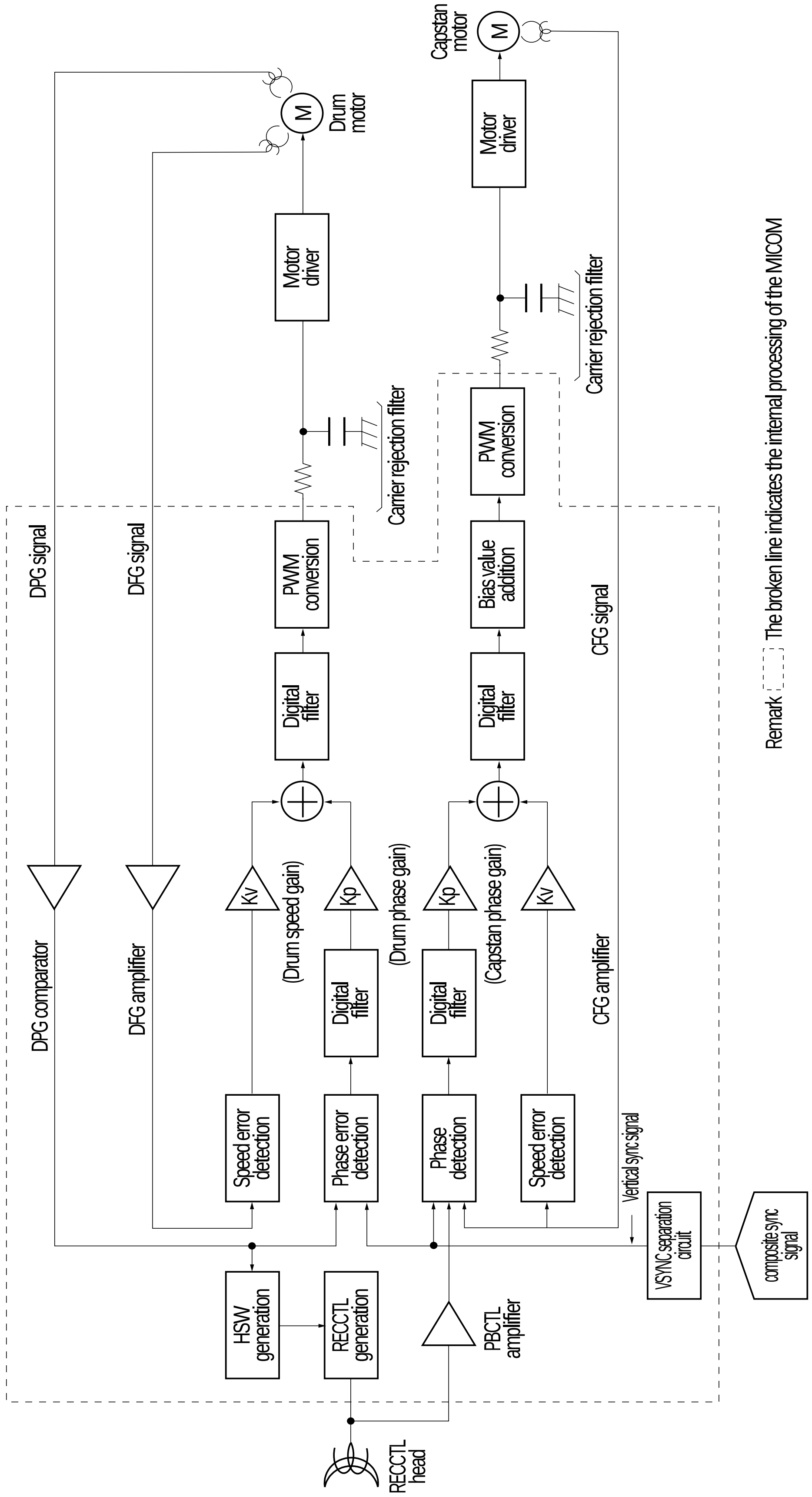

Drum motor
M
Capstan motor
M
Motor driver
Motor driver
Carrier rejection filter
Carrier rejection filter
PWM conversion
PWM conversion
Bias value addition
Digital filter
Digital filter
DPG signal
DFG signal
CFG signal
DPG comparator
DFG amplifier
CFG amplifier
Kv
(Drum speed gain)
Kp
(Drum phase gain)
Kp
(Capstan phase gain)
Kv
Digital filter
Digital filter
Speed error detection
Phase error detection
Phase detection
Speed error detection
Vertical sync signal
VSYNC separation circuit
composite sync signal
HSW generation
RECCTL generation
PBCTL amplifier
RECCTL head
Remark
The broken line indicates the internal processing of the MICOM

Fig. 14-17 Block Diagram

(2) Capstain Speed Error Detector

The capstan speed control operates so as to hold the capstan at a constant rotational speed, by measuring the period of the CFG signal. A digital counter detects the speed deviation from a preset value. The speed error data is added to phase error data in a digital filter. this filter controls a pulse-width modulate (PWM) output, which controls the rotational speed and phase the captain.
When the error is zero, the PWM circuit outputs a waveform with a 50% duty cycle.

The CFG input signal from the capstan motor is a square wave the CFG input signal is compared by a comparator and than sent to speed error detector as the CFG signal.

The speed error detector uses the system clock to measure the period of the CFG signal, and detects the deviation from a preset data value. The preset data is the value that would result from measuring the CFG signal period with the clock signal if the capstan motor were running at the correct speed.

The error detector operates by latching a counter value when it detects an edge of the CFG signal.
the latched counter provides 16 bits of speed error data for the digital filter to operate on.
The digital filter adds the speed error data to phase error data from the capstan phase control system,then sends the result to the pulse-width modulator as capstan error data.

(3) Capstain Phase Error Detector

The capstan phase error detector consists of a 16-bit counter, a capstan phase preset data register pair, a latch signal circuit driven by a feedback signal, and a captain phase error data register pair.

The capstan phase control in rec mode is executed by comparing HD S/W, which is synchronized with V-sync, with devided CFG signal. And than it does in playback mode by comparing HD S/W, which is synchronized with DFG and DPG, with PB CTL signal.

The latch signal for the phase error data in record mode is the devied CFG signal, which is devided from the CFG signal in the CFG frequency devider to a frequency of 30HZ.
In playback, the latch signal is the devied CFG signal obtained by frequency division from the rising edge of PB-CTL signal (playback control pulse signal).

The error data is a signed binary value centered on a phase error of zero (corresponding to the correct rotational phase). If the phase legs the correct phase ,the error is positive (+).
If the phase leads the correct phase, the error is negative (-).

(4) Drum Speed Error Detector

Drum speed control operates so as to hold the drum at a constant rotational speed, by measuring the period of the DFG signal. A digital counter detects the speed deviation from a preset value. The speed error data is added to phase error data in a digital filter. The filter controls a pulsewidth modulated (PWM) output,which controls the rotational speed and phase of the drum.

The DFG input signal from the drum motor is a square wave. The DFG input signal is compared by a comparator and than sent to the speed error detector as the DFG signal.

The speed error detector uses the system clock to measure the period of the DFG signal, and detects the deviation from a preset data value. The preset data is the value that would result from measuring the DFG signal period with the clock signal if the drum motor were running at the correct speed.

The error detector operates by latching a counter value when it detects an edge of the DFG signal. The latched count provides 16 bits of speed error data for the digital to operate on.
The digital filter adds the speed error data to phase error data from the drum phase control system, then sends the result to the pulse-width modulator as drum error data.

(5) Drum Phase Error Detector

Drum phase control must start operating after the drum motor is brought to the correct rotational speed by the speed control system . Drum speed control works as follows in record and playback.

- Record : Phase is controlled so that the vertical blanking intervals of the recorded video signal will line up along the edge of the tape.

- Playback : Phase is controlled so as to trace the recorded tracks accurately.

A digital counter detects the phase deviation from a preset value. The phase error data is added to speed error data in a digital filter. this filter controls a pulse-width modulated (PWM) output, which controls the rotation phase and speed of the drum.When the error is zero, the PWM circuit outputs a waveform with a 50% duty cycle.

The phase counter error detector compares the phase of the DPG pulse (tach pulse),which contains video head phase information, with a reference signal. In the actual circuit , the comparison is carried out by comparing the head-switching (HSW) signal,which is delayed by a counter that is reseted by DPG, with a reference signal. The reference signal is the REF 30Hz signal,which differs between record and playback as follows.

- Record : V sync signal extracted from the video signal to be recorded (frame rate signal, actually 1/2V sync).

- Playback : 30Hz signal divided from the system clock.

14-11 VCR Video

(1) Luminance Signal Recording System

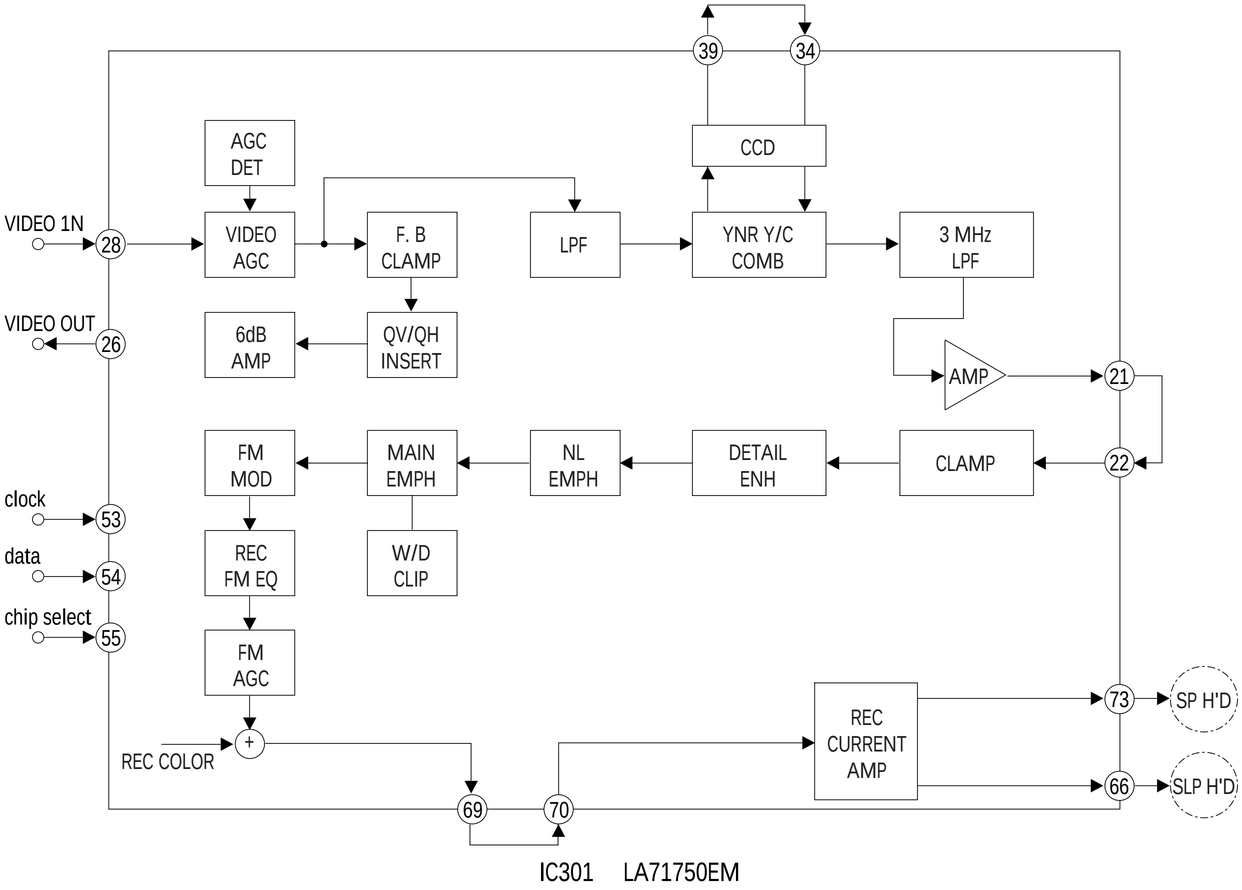

VIDEO 1N
VIDEO OUT
clock
data
chip select
28
26
53
54
55
39
34
AGC DET
VIDEO AGC
F. B CLAMP
LPF
CCD
YNR Y/C COMB
3 MHz LPF
6dB AMP
QV/QH INSERT
AMP
21
22
FM MOD
MAIN EMPH
NL EMPH
DETAIL ENH
CLAMP
REC FM EQ
W/D CLIP
FM AGC
REC COLOR
REC CURRENT AMP
73
66
SP H'D
SLP H'D
69
70
IC301 LA71750EM

Fig. 14-18 Luminance Record Process

1) Outline

Fig. 14-18 shows the video signal recording system.

The selected video input signal goes to pin 28 of Luma/Chroma processor IC (IC301). And then it enters VIDEO AGC circuit. The gain of AGC circuit is controlled by AGC detector so that the output is constant (approx. 2Vp-p). The output signal of AGC is clamped by the FBC(Feed Back Clamp) circuit. This signal appears at pin 26, after being amplified at the internal video amp and driver.

The output signal from the clamp circuit enter the detail enhancer circuit. In the detail enhancer circuit, the low level high frequency video signal is emphasized to improve the original signals frequency characteristics.

onlinear emphasis circuit is employed to improve S/N and frequency response characteristics together with the following main emphasis. Noise effects the FM wave at a higher frequency, so the S/N can be improved by emphasizing the higher frequency before recording and by suppressing the play signal during demodulation.

The difference of non linear emphasis from main emphasis is that the emphasis characteristics change is depending on the input level. The gain of the emphasis circuit is inversely proportional to the level of the high frequency component of the signal. That is, if the high frequency portion of the signal is low the main emphasis circuit will amplify the signal.

2) Main Emphasis Circuit

The dynamically emphasized luminance signal is now supplied to the main emphasis circuit where all the high frequency components of the signal are boosted more than the low frequency components. The boosting action is required for the high frequency components because in the FM recording method, the noise of the playback signal increases in proportion to the modulated signal frequency or low level signal. By using the nonlinear emphasis and main emphasis system, the total S/N ratio is increased. The output of the main emphasis circuit is then supplied to the white and dark clip circuit.

3) White and Dark Clip Circuit

After emphasis is performed, large overshoots and undershoots in the luminance signal are limited to a specified level. This is done to avoid FM over modulation. The output of the main emphasis circuit is then supplied to the FM modulator circuit.

4) FM Modulator

A. The amplitude of the FM signal is limited, so the signal is recorded on tape near the maximum record level which increases the S/N ratio.

B. The FM carrier is set to 3.4MHz (at the Sync tips) and the deviation to 4.4MHz by inside IC circuit (for the white peak). The actual device which constitutes the FM modulator is a stable multivibrator.

This multivibrator generates a sine wave output of variable frequency.

The frequency of sine wave is governed by the level of the processed video signal at any given point. Therefore, the processed video signal varies the frequency of the sine wave which is frequency modulation (FM). During playback in SLP mode, the crosstalk of the adjacent track is more apparent than in standard mode. It appears as jitter and noise on the monitor. To reduce this noise from the screen, the FM carrier frequency has to be 1/2fh shifted up during recording. This is done by applying the head switching pulse to the FM modulator control pin57 during SLP recording. The FM modulated luminance signal goes to record equalizer circuit and it is mixed with chrominance signal at the record Amp circuit inside video IC.

5) Record Amp

The frequency modulated luminance signal and chroma signal are mixed in the record amp of pre-amp block inside video IC. Then this mixed signal is amplified and supplied to the video heads via the rotary transformer and recorded on the magnetic tape.

Tape speed selection determines which video heads will be used. That is, signal output from pin 66 (SLP) and 73 (SP) of pre-amp block are supplied to video heads.

Control signal of speed mode is applied to pin 53(clock), 54(data), 55(chip select) of video IC from Micom IC.

(2) Luminance Signal Playback System

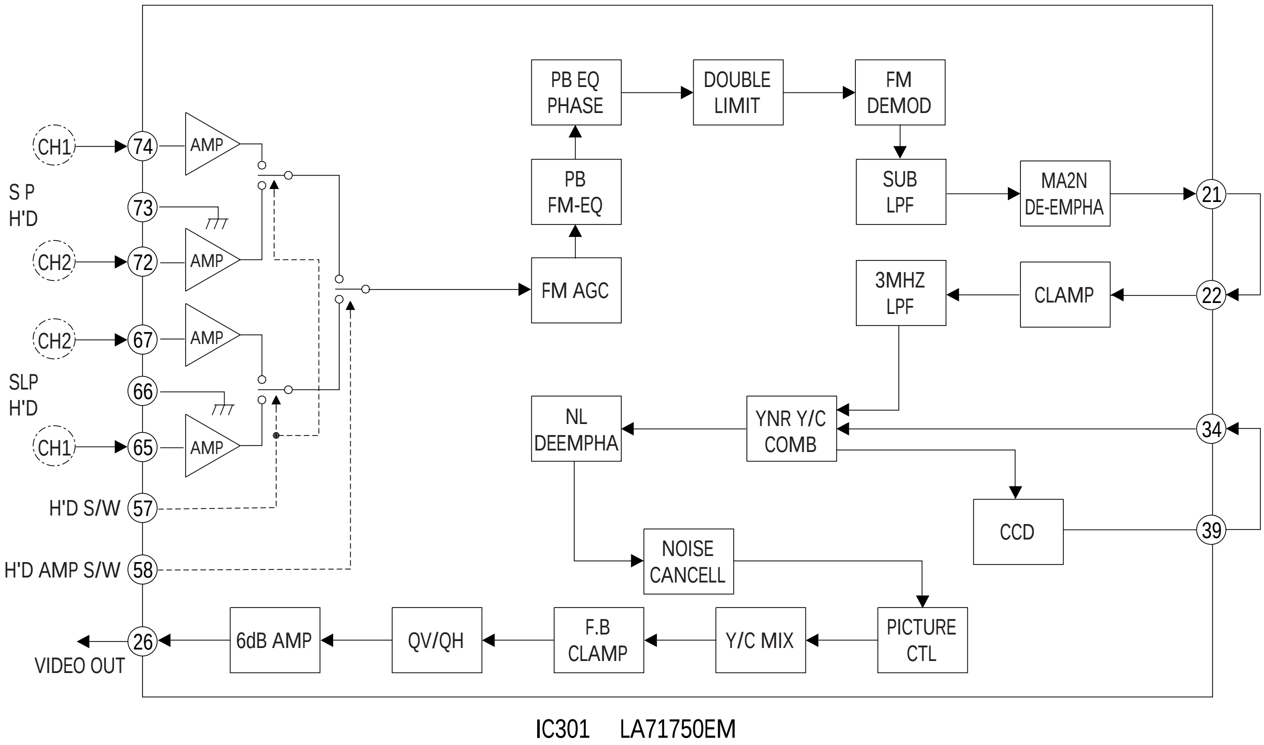

CH1
74
AMP
S P
H'D
73
CH2
72
AMP
CH2
67
AMP
SLP
H'D
66
CH1
65
AMP
H'D S/W
57
H'D AMP S/W
58
26
VIDEO OUT
6dB AMP
QV/QH
F.B
CLAMP
Y/C MIX
PICTURE
CTL
NOISE
CANCELL
NL
DEEMPHA
YNR Y/C
COMB
CCD
FM AGC
PB
FM-EQ
PB EQ
PHASE
DOUBLE
LIMIT
FM
DEMOD
SUB
LPF
MA2N
DE-EMPHA
21
3MHZ
LPF
CLAMP
22
34
39
IC301 LA71750EM

Fig. 14-19 Luminance Playback Process

1) Outline

The video signal recorded on the tape is picked up by CH1,CH2 head and is supplied to pre-amp block via rotary trans. During playback, as per the speed, SP and SLP head is determined by Pin60 of respectively.
CH1 signal inputs to Pins 65 and 74 while CH2 signal inputs to Pins 67 and 72 of video IC. The pick up operation is controlled by the head switching pulse inputted to pin 57. During the high portion of the switching pulse, CH2 is picked-up and just the opposite is true for CH1. In the pre amp IC, the FM signal is amplified 60dB and this signal is applied to FM AGC.

2) FM AGC AMP

At the FM AGC Amp (FM), signals are automatically balanced. One of the AGC circuit outputs is fed to AGC detector circuit which detects signal level fluctuations. The detector output signal is applied to the FM AGC Amp to keep the output constant.This output is applied to the PB FM EQ block. FM EQ is correct the phase distortion and level. The signal through PB EQ circuit is applied to the double limiter.

3) Double Limiter Circuit

A FM signal on the tape which contains AM components will be read during playback. If there is a severe AM component, a drastic drop in FM carrier can occur. This lack of FM carrier can be called a noise region. Double limiting is used for improving the S / N ratio and carrier loss. The playback FM signal is split into two paths, one goes to high pass filler and sub-limiter. The other goes to the main-limiter after passing through a LPF. ONE path of the FM signal goes to the high pass filter, so that the low frequency(AM) component can be removed, and the other carrier is supplied to the sub-limiter. The output signal of sub-limiter is mixed with the signal from the low-pass filter and sent to the FM demodulation circuit.

4) FM DEMODULATOR

The FM demodulator consists of a stable mono multivibrator balanced modulator (BM) and a LPF. The FM demodulator circuit first converts the FM signal to a pulse width modulator signal. Then the circuit smoothes the PWM signal to demodulate the video signal. This demodulated signal is fed to the LPF to remove its FM carrier component and any other harmonics. The demodulated luminance signal outputs from Pin 21 and is applied to the 3MHz LPF through main deemphasis circuit. To reduce demodulation noise, the output of the 3MHz LPF is applied to a non-linear deemphasis circuit through YNR circuit.

5) Main De-emphasis Circuit

Before modulation, main emphasis was performed. Because the high frequency components of video signal were boosted more than the low frequency components in the recording mode, main deemphasis must be performed to obtain a normal video signal. That is this circuit returns the emphasized high frequency component to the original value.

6) Non Linear De-Emphasis Circuit

This circuit is the counter part of the dynamic pre-emphasis circuit during recording. The characteristics are also the opposite of those in recording.

7) Drop Out Compensator/YNR Circuit

This circuit compensated for missing parts of the FM signal due to dust, dirt on the tape or irregular tape coating, etc. The clamped video signal is supplied to the CCD 1H circuit. The 1H delayed video signal from CCD block is also supplied to the 6MHz LPF to reject the sampling noise of CCD IC.

Then, the output of LPF is applied to Pin 34 of video IC. When the DOC detector detects the FM loss, a 1H delayed video signal is added in place of the missing signal.

8) Noise Canceller Circuit

The noise canceller circuit removes the high frequency noise contained in the video signal which has the reverse characteristics of the detail enhance in the recording mode. The output of the noise canceller circuit is supplied to the Luminance and Chrominance mixer circuit. The mixed chroma and luminance signal are then output at Pin 26.

(3) Chroma Signal Recording System

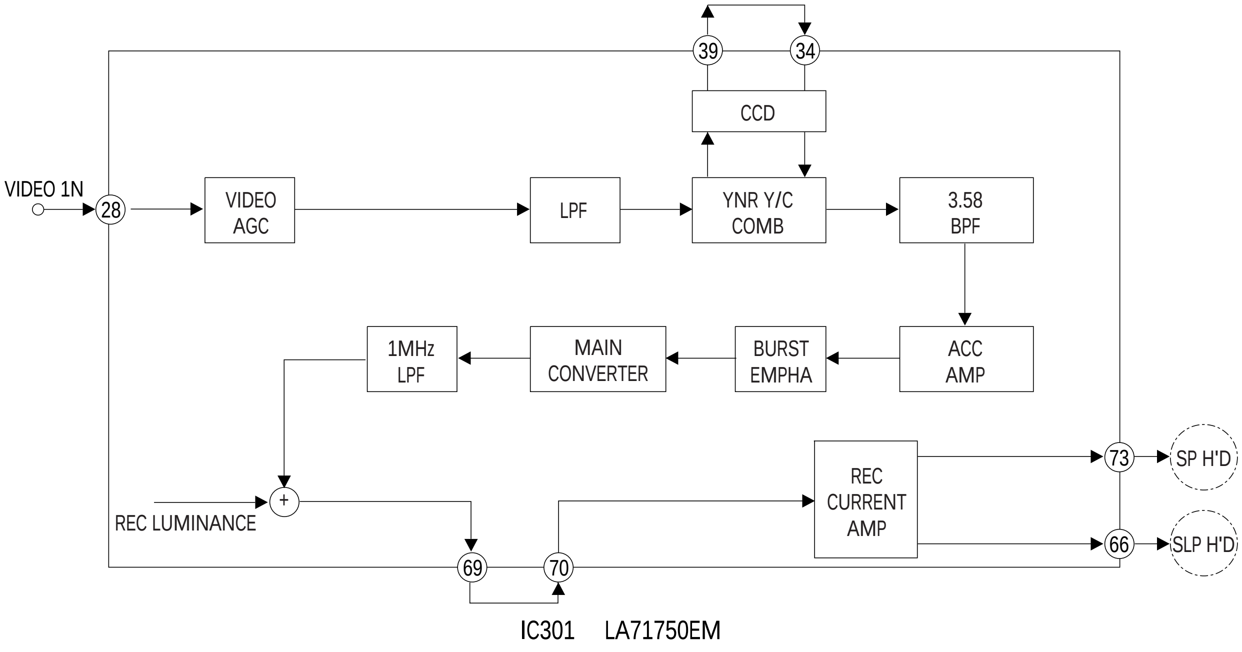


Fig. 14-20 Chrominance Record Process

1) Outline

Fig. 14-20 shows the chroma signal recording system. The chroma signal recording process is performed by video IC. The input video signal is fed to Pin 28 of IC and supplied to Y/C COMB circuit through AGC AMP.

The output signal of Y/C COMB circuit is applied to ACC amplifier. The ACC amplifier is used for both burst ACC which keeps the burst level at a constant value in recording and the color ACC which controls the reference level of the burst ACC with the color signal level. The color ACC works to maintain a relatively high output level by boosting low level input signals to improve color S/N ratio. The signal is then applied to the burst emphasis circuit. Burst emphasis emphasizes the burst signal by +6dB during recording and feeds it to the main converter. The 3.58MHz signal are mixed in the main converter to perform frequency conversion.

The main converter is a mixer having the two types of output components which are the added frequency of 4.21+3.58=7.8MHz and the difference frequency component 629KHz.

Added frequency is rejected by the 1MHz LPF and the 629KHz down converted chroma signal is supplied to the luma/chroma mixer of pre-amp block and then recorded on the tape via the record amp and heads.

AFC detection is performed with the head switching pulse and the fh signal generated from 321fh VOC output. The detector output controls the VCO frequency which will be locked precisely at 320fh (5.035MHz).

The 320fh signal is counted down to 1/8 and the resultant 40fh (=629KHz)carrier signal is phase shifted triggered by each horizontal sync signal which is wave shaped as a 50% duty pulse by the pulse generator.

The direction of the rotational phase shift depends on the levels of the rotary head switching signal from pin 57 and when the switching signal is "H" level, the phase is retarded by 90 degrees for every 1H, and when it is at a "L" level it will advance by 90° for every 1H this 40fh phase shifted sub-carrier (PSSC) signal enters the sub-converter and the 3.58MHz carrier signal is locked at the color burst frequency by the record APC.

The PSSC signal is frequency converted into 3.58MHz +/-629KHz. Then 4.21MHz component (=3.58MHz+/-629KHz)is extracted through a 4.2MHz BPF.

The 4.21MHz signal is used as a carrier signal for down conversion of the color signal as described previously.

2) ACC (Automatic Color Gain Control) Circuit

The ACC is used as burst ACC in the LP mode, however it is also used for peak ACC in the SP/SLP mode.
The purpose of using two different ACC operations is to improve the overall Chroma S/N ratio during playback. In SP and SLP, there is H-sync alignment. This indicates that there is bust alignment as well. Whenever two video tracks overlap or a video head picks up crosstalk from an adjacent track, beats are produced during playback. Perhaps the most noticeable beats are produced by H-sync and burst. But in SP and SLP, these beats occur right at H-sync and burst and are out of the picture. In LP, however, there is no H-sync alignment and these beats can be seen in the picture. To keep the beats at a minimum in LP, we keep the burst level constant so that the beat intensity is constant. We know that ACC acts to improve the color S/N,and in LP, the ACC detector locks at the burst level,and keeps it constant. Thus we have ACC operation with the least beats. In SP and SLP, the beats caused by burst overlap are out of picture, so we don't really mind if the burst level changes or not. To improve the color S/N ratio even more,we use peak ACC in SP and SLP.That is,if the chroma level is too low to record, the amplification degree is increased by 3dB. However, the chroma level is sufficient for recording, this peak ACC is changed to burst ACC to avoid over amplification. By changing the ACC according to picture color content, the burst level may vary. The color ratio improvement is based on the color content itself during SP and SLP provides a somewhat better S/N ratio.

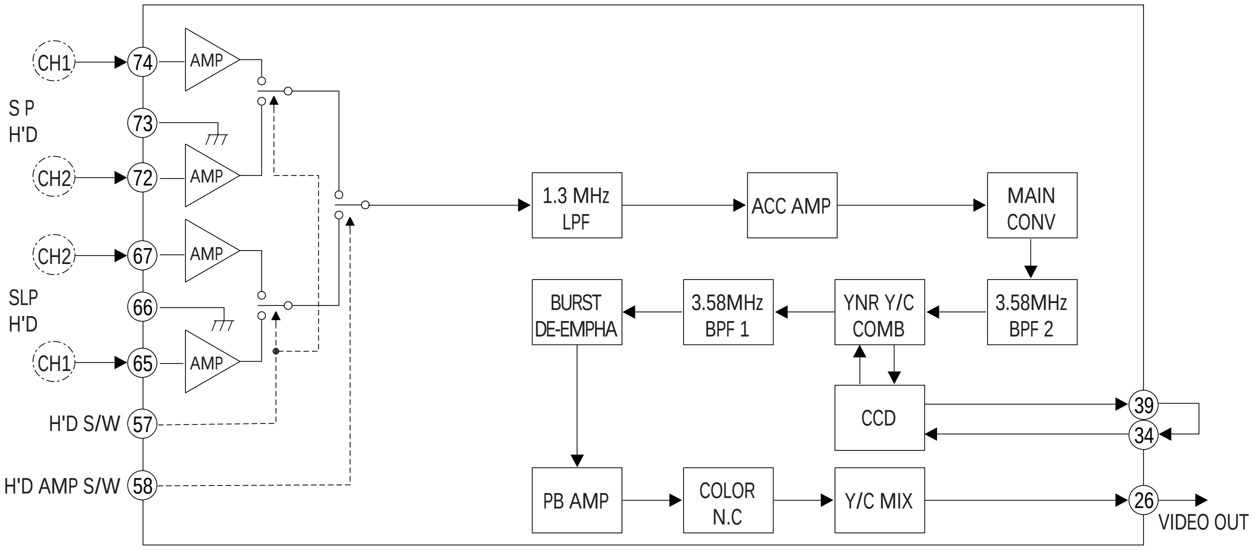
3) Four (4) Phase Rotation

CH1 is advanced 90° every channel, while CH2 is delayed 90°. When the frequency is set to 629KHz, if phase is shifted by +/-90 it becomes 629KHz +/-90. The 40fh+/-90 (=629KHz +/-90)is balanced modulated via fsc (3.58MHz) depending on which side band is detected. That is, the fs +40fh+/-90 (4.2MHz +/-90) of total frequency is supplied to the main converter. In record mode, the signal operates same as in play back mode. During playback, the phase is returned to original state.

4) AFC (Automatic Frequency Control) Circuit

Luminance signal is input to H-sync separator. The H-sync is separated and supplied to phase comparator.
This signal can be described as fh (Horizontal Sync frequency of input video signal). However, VCO oscillates at 320fh (5.035MHz). This 321fh is counted down by 1/8 and 1/40 and resultant fh is supplied to phase comparator. fh and fh are supplied to the phase comparator for comparison of their phases.
After comparison, the phase
differences is output to VCO (320fh) in terms of error voltage. Therefore, the oscillation frequency of VCO is controlled by this error voltage. That is, if the fh phase is changed by H-sync signal fh, error voltage is changed accordingly and if the phases of fh and fh are met due to change of VCO oscillation frequency, error voltage does not feedback. 320fh VCO is oscillated in accordance with phase sync at fh. Therefore, 40fh input to sub converter by phase shift is always sync horized with phase.
The AFC loop performs the same operation during record and playback. In recording, phase of VCO is in accordance with H-sync signal of current video signal.
Which in playback, the phase sync of VCO is consistent with H-sync signal which is separated from the video signal.

(4) Chroma Signal Playback System



IC301 LA71750EM

Fig. 14-21 Chrominance Playback Process

1) Outline

Fig. 14-21 shows the chroma signal playback system.

The FM signals picked up by the CH-1 and CH-2 video heads are supplied to the pre-amp block.

The FM signal from CH-1 and CH-2 are alternately selected by the switch and output signal as a continuous signal. Goes to the ACC amp through the 1.3MHz LPF. The 1.3MHz LPF is used for passing only down converted 629KHz chroma signal in the playback mode. The ACC amp stabilizes the 629KHz color signal level.

The output color signal from amp then enters the main converter circuit. In the main converter circuit this signal is mixed with the 4.21MHz phase shifted carrier signal and converted into 4.21MHz + 629KHz signals.

2) Main Converter

Inside of IC, the main converter converts the 629KHz rotational chroma signal to a 3.58MHz non-rotational signal. The two inputs of this main converter are the 629KHz signal, which comes from the output of the ACC, and a 4.21MHz which has the same rotational phase as the 629KHz signal. It is important that the rotational phase of the 4.21MHz signal is the same direction as the 629KHz playback chroma signal. To obtain the 3.58MHz non-rotational stable signal, the same direction rotational signal should be mixed with the rotational chroma signal.

During the conversion process, the phase is also mixed by the frequency. Therefore, when 629KHz is subtraced from 4.21MHz,the result is the non-rotational 3.58MHz stable signal. The output signal of the main converter goes to the 3.58MHz BPF. In the 3.58MHz BPF,the conversion noise(4.21MHz+629KHz=4.8MHz) is rejected and the 3.58MHz color signal goes to the comb filter.

In the comb filter, the crosstalk components due to the adjacent track are eliminated and the color signal is applied to PB-AMP, BURST De-Emphasis, Killer and are applied to LUMA and CHROMA mixer input through the CNC block.

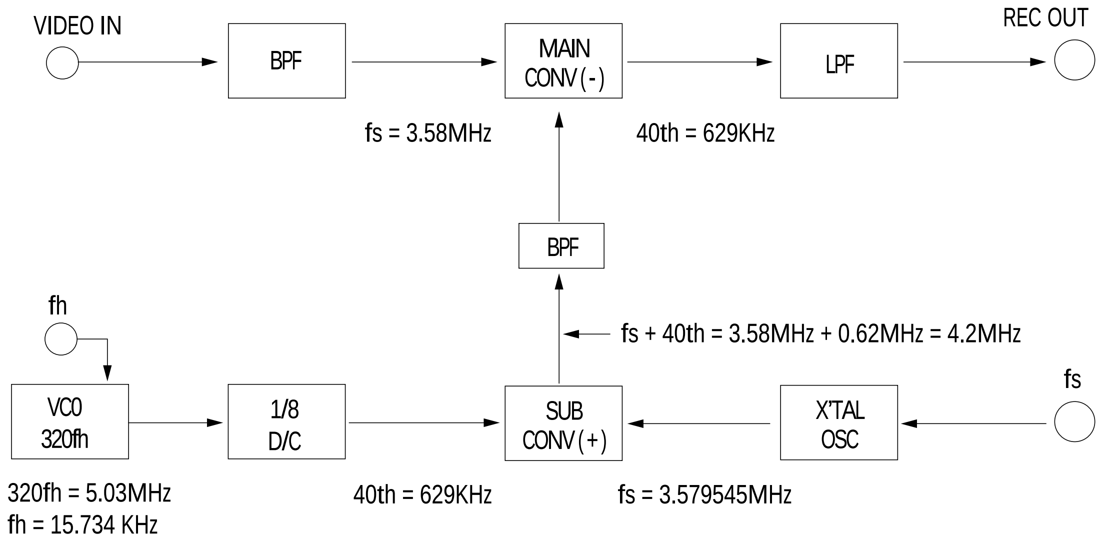

VIDEO IN
BPF
MAIN CONV(-)
LPF
REC OUT
fs = 3.58MHz
40th = 629KHz
BPF
fh
fs + 40th = 3.58MHz + 0.62MHz = 4.2MHz
fs
VCO 320fh
1/8 D/C
SUB CONV(+)
X'TAL OSC
320fh = 5.03MHz
fh = 15.734 KHz
40th = 629KHz
fs = 3.579545MHz

Fig. 14-22 Block Diagram of Color REC mode by the method of a Down Converter

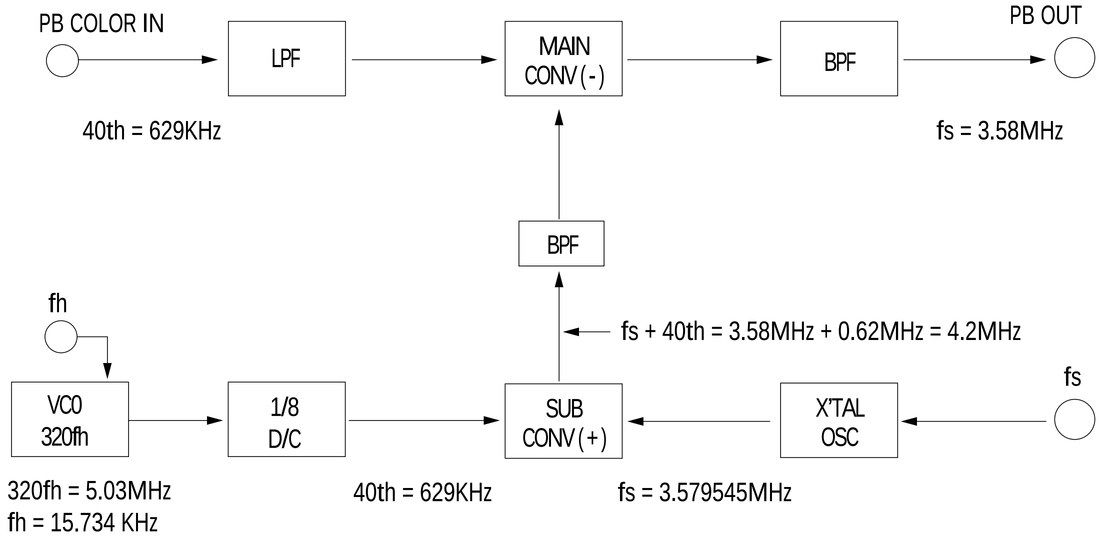

PB COLOR IN
LPF
MAIN CONV(-)
BPF
PB OUT
40th = 629KHz
fs = 3.58MHz
BPF
fh
fs + 40th = 3.58MHz + 0.62MHz = 4.2MHz
fs
VCO 320fh
1/8 D/C
SUB CONV(+)
X'TAL OSC
320fh = 5.03MHz
fh = 15.734 KHz
40th = 629KHz
fs = 3.579545MHz

Fig. 14-23 Block Diagram of Color PB mode by the method of a Down Converter

14-12 Hi-Fi Audio

(1) Outline

Hi-Fi circuit consists of HiFi audio LPF,VCO,BPF,FM detect circuit and switching noise compensator, PRE-AMP etc. Linear audio consists of an ALC circuit,REC EQ circuit and a PB EQ circuit.
Hi-Fi and Linear audio share the same input selector,output selector and mute circuit.

1) REC Mode (L-CH Only)

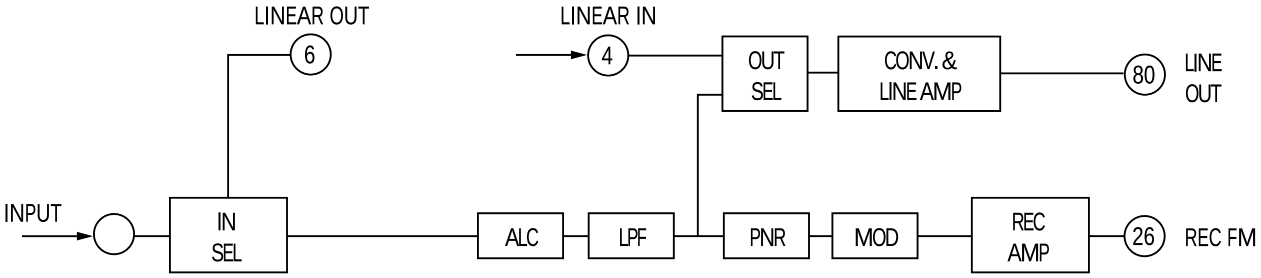

LINEAR OUT
6
LINEAR IN
4
OUT SEL
CONV. & LINE AMP
80
LINE OUT
INPUT
IN SEL
ALC
LPF
PNR
MOD
REC AMP
26
REC FM

Fig. 14-24 REC Mode (L-CH Only)

2) PB Mode (L-CH Olny)

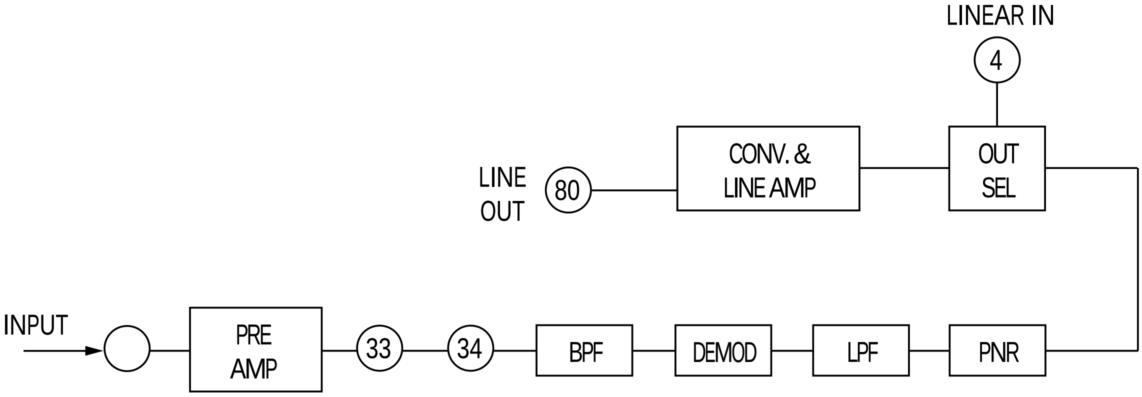

LINEAR IN
4
LINE OUT
80
CONV. & LINE AMP
OUT SEL
INPUT
PRE AMP
33
34
BPF
DEMOD
LPF
PNR

Fig. 14-25 PB Mode (L-CH Only)

(2) Block Description

1) Input Selector

Input selector outputs 1 signal from 4 different signals received. It outputs 1 selected signal from tuner,rear,front.

2) Normal(Linear) Selector

Two signals,L-CH and R-CH are inputed to Hi-Fi IC.But,linear audio is capable of receiving only one signal.Therefore,the 2 input signals must be selected. Usually,the outputs are mixed signals of L-CH and R-CH unlike the input selector,the normal selector does not amplify the selected signal.

3) Output Selector

It selects to output Hi-Fi L-CH,Hi-Fi R-CH,LINEAR and MIX(Hi-Fi+LINEAR) signals with the final output IC pin 78 (R-CH) and pin 80 (L-CH).

4) Output ALC(Convertor)

ALC is used because when the input level of RF converter gets bigger,it shows up as noise on the screen. But,this block is not used this model(ALC OFF)

5) PNR(Peak Noise Reduction)

It is a type of emphasis,de-emphasis function to eliminate noise during modulation /demodulation PNR operates as that of VHS FORMAT to reduce noise.

6) Audio Limiter

Before modulating the signals from PNR block,it limits signals exceeding the size limit to max deviation of +/- 150KHz.

7) VCO(Voltage Control Oscillation)

It is a modulation functionthat oscillates 1.3MHz (L-CH) and 1.7MHz (R-CH).

8) RF LPF

It is a function to eliminate the harmonic components of Hi-Fi carrier formed during VCO,which may affect other block. It’s pass-band approximately 2MHz.

9) MIXER

It mixes the Hi-Fi carrier formed in L-CH and R-CH. However,due to the frequency difference between L-CH and R-CH,when equal amount of R-CH is recorded to tape,R-CH is must smaiier than L-CH.
Therefore,the R-CH output is approximately 10dB bigger than L-CH.

10) Current Amp

It is the final amplifier of the mixed Hi-Fi carrier IC pin 28’s resistance controls current, which change the size of IC pin 26.

11) AGC(Auto Gain Control)

It maintains uniform size of Hi-Fi envelope,which is inputed by pre-amp in play back mode.

12) BPF(Band Pass Filter)

L-CH and R-CH each has BPF. The center frequency is same as carrier frequency.
It is used to receive only Hi-Fi carrier from all signals inputed to pre-amp.

13) SW Noise Compensation

Unlike the linear audio,insted of using fixed head,drum heads are used,which creates halting points However,in order for the audio to be headed continuously,the damages from halting points are modulated,which creates noise. SW noise compensation is a block to minimize this particular noise.

14) Hold Pulse

It makes standard signal(Pulse) to compensate SW noise.

15) DET(Hi-Fi/LINEAR)

From the Hi-Fi envelope inputed from pre-amp,it decides whether the signal passing through L-CH BPF is Hi-Fi or LINEAR tape it's size(the signal passing through BPF is below 10mVpp, it is not Hi-Fi,therefore,it output linear)

16) DOC(Drop Out Compensation)

If demodulation is conducted without properly treating the damage on Hi-Fi envelope caused by scratch on the tape,noise occurs. In order to improve this noise occurrence,DO DET compensate the drop-out using the same methode of compensating the switching noise when the damage on the envelope ranges 10~15mVpp.

17) ENV DET

To obtain optimal tracking,envelop must be peak to peak and micom should be in DC. It is a function to convert Hi-Fi envelop to DC. If it is lower than 0.8V at micom,it sends linear mode date to HiFi IC.

18) Serial Data Decoder

It receives IIC BUS to enable the operation of inner block and decodes into serial data.

(3) Pin Port Description (Tuner Mode ; 1KHz, 100% Modulation Input)

PIN NO.	PIN NAME	DC VOLT.	SIGNAL	REMARK
1	LINE MUTE	0 / 5	-	Reduce the line out noise.
2	Linear out to TM	4.2 V	-17 dbm	Converter Model Only
3	Vcc 9V	9 V		Power Supply for in/out Select
4	Linear Input	2.5 V	- 28.2 dBV	Audio from A/V IC
5	Vcc 5V	5 V		Power Supply for in/out Select
6	Linear out ti A/V	2.5 V	-21.5 dBV	Audio out to A/V IC
7	EXT1-INPUT (L)	0	-28.2 dBV	Line Input 1 (FRONT)
8	ALC Detector	-		ALC Detector for RF converter
9	EXT2-INPUT (L)	0	-28.2 dBV	Line Input 2 (REAR)
10	GND	-		
11	EXT3-INPUT (L)	0	-28.2 dBV	Line Input 3 (DVD)
12	Monitor Input (L)	2.5 V		DVD Audio (L) Input
13	Input changeover switch output (L)	2.2 V	-21 dBV	PB/REC sitch output . Transform R/P signals into DC.
14	ALC Input (L)	2.5 V	-21 dBV	ALC Input Terminal
15	Vcc 5V	5 V		Power Supply for in/out Select
16	1/2 Vcc	2.5 V		1/2 Vcc Terminal
17	Rec Mute Terminal	0 V		GND (Not in use)
18	NR Waiting Det	-	-	Terminal for waiting dector
19	NR Waiting Filter	2.5 V		NR Waiting Filter 1 For L-CH
20	NR Waiting Filter	2.5 V		NR Waiting Filter 2 For L-CH
21	CCA Reference			CCA Reference for L-CH
22	NR Empha			NR Empahasis for L-CH
23	Tracking DC out	0 ~ 5 v		Hi-Fi Env Det Level Output
24	Audio Pb FM1	2 V / 4 V		Audio Playbak FM 1 input (H)
25	GND			Hi-Fi PRE-AMP GND
26	REC Current OUT			Rec current out to Head
27	Audio Pb FM2	2 V / 4 V		Audio Playbak FM 2 input (L)
28	Crrent adjust	2.4 V		Rec Current adjust point
29	Alc detector			ALC detection
30	Hi-Fi detector			Hi-Fi/ Normal detect
31	Monitor	2.5 V		FM Monitor
32	Vcc 5V	5 V		Power Supply for Hi-Fi
33	Pb FM Out	2.5 V		Output of H'D Amp in PB Mode
34	Pb FM Input	-	350 mVp-p	Input of FM in PB Mode
35	GND			GND FOR LOGIC
36	Vcc 5V	5 V		Power Supply for LOGIC
37	Serial data input	0 / 5 V		
38	Serial clock input	0 / 5 V		
39	Audio head s/w	0 / 5 V		Head s/w 30 hz input
40	Mts Mode out			1V : mo / 2V : St / 3V : Bi

PIN NO.	PIN NAME	DC VOLT.	SIGNAL	REMARK
41	CCA Reference			CCA Reference for R-CH
42	NR Empha			NR Empahasis for R-CH
43	NR Waiting Filter	2.5 V		NR Waiting Filter 2 For R-CH
44	NR Waiting Filter	2.5 V		NR Waiting Filter 1 For R-CH
45	NR Waiting Det	-	-	Terminal for waiting dector
46	Vcc 5V	5 V		Power Supply for in/out Select
47	ALC Input (R)	2.5 V	-21 dBV	ALC Input Terminal
48	Input changeover switch output (R)	2.2 V	-21 dBV	PB/REC sitch output . Transform R/P signals into DC.
49	Mute Control			
50	GND			GND FOR ANALOGE
51	FSC IN		200 mVp-p	3.58 Mhz input
52	DC Reg	1.2 V		Bandgap Power supply for MTS
53	Stereo PLL filter	3.8 V		LPF for Stereo PLL
54	Vcc 5V	5 V		Power Supply for MTS Select
55	Pilot Canceller f	3.8 V		CTL Pin of cancel signal for pilot C.
56	FM Filter			Filter for making stable dc
57	SIF Input			SIF Audio input from TM Block
58	REG Filter	4.5 V		Filter of reference voltage source.
59	Filter Auto Adjust	3.8 V		Loof filterof PLL for auto adj
60	Pilot Det Filter	3.8 V		Detection for pilot detection circuit
61	PC_DC_MO	3.3 V		Absorbing the DC offset
62	PCDOUT	3.8 V		Absorbing the DC offset
63	PCDIN	3.8 V		Absorbing the DC offset
64	PCDBXIN	2.6 V		Absorbing the DC offset
65	Main V/I convert	3.8 V		Converting the voltage of signal
66	SPE Det V/I convert	3.8 V		Connecting pin of smooth capacity of detection circuit.
67	Spectral DET			Converting the voltage of signal
68	Wide Band Det			Connecting pin of smooth capacity of detection circuit.
69	EXT1-INPUT (R)	0	-28.2 dBV	Line Input 1 (FRONT)
70	GND			GND FOR MTS
71	EXT2-INPUT (R)	0	-28.2 dBV	Line Input 2 (REAR)
72	Wid det V/I convert	3.8 V		Converting the voltage of signal
73	EXT3-INPUT (R)	0	-28.2 dBV	Line Input 3 (DVD)
74	Monitor Input (R)	2.5 V		DVD Audio (R) Input
75	PCDCOSPE			Absorbing the DC offset
76	PC_OUT_DBX	3.3 V		Absorbing the DC offset
77	LINE MUTE (R)	0 / 5	-	Reduce the line out noise.
78	Line out (R-CH)			
79	GND			GND FOR AUDIO
80	Line out (L-CH)			

14-13 Linear Audio

(1) Block Diagram

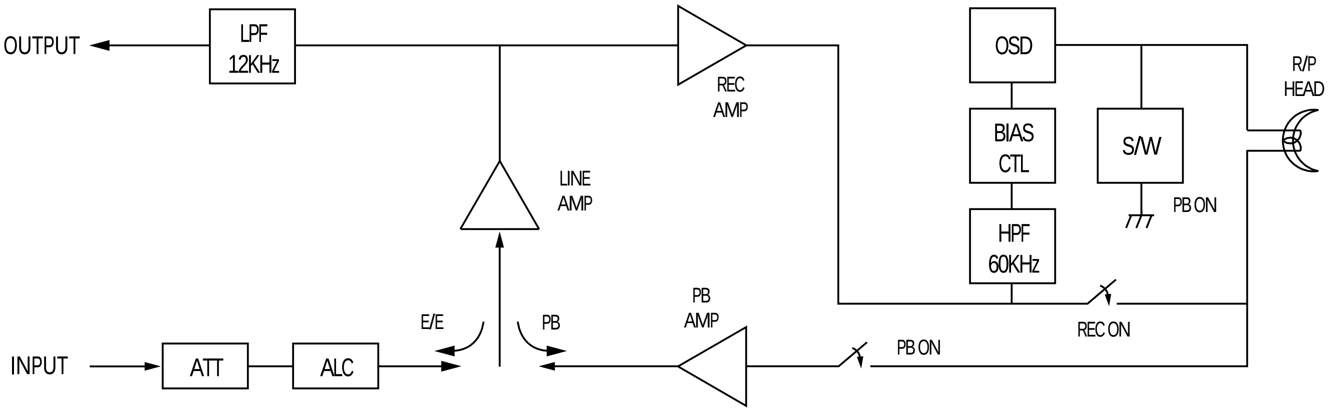


Fig. 14-26 Block Diagram

(2) Block Description

1) ATT (Attenuation)

Line amp is shared between PB mode and E/E mode, which reduces the recorded signal by 20dB and resister.

2) ALC (Auto Level Control)

If the signal level is lower than the reference signal (-6dBm) level, the output signal will equal the input signal. However, if the input signal is higher than the reference signal, the output will not equal the input and will gen erate uniform signal.

* ALC Application Purpose : Since linear audio is in AM (amplitude modulation) and uses magnetic recording device, it only records limited size and as the size of input signal increases, distortion increases. To prevent this occurance, mark sure the signal does not get bigger even if the level of distortion repodly increases.

3) LINE AMP

Line amp's gain is approximately 23dB. The purpose of the line amp is to amplify to 68dB in order to obtain the recorded signal on the tape during playback. As the amp gain increases, the passband decreases, which enables the amplification of low frequency. However, it is impossible to amplify frequency of 10KHz to 68dB with just 1 OPAMP. Therefore, to satisfy frequency and gain.

Line amp must be constructed into 2 steps of OP AMP. (gain is fixed within IC)

4) 12KHz LPF

There are various noises to signal output. The loudest noise is the “Video SYNC Frequency” of 15.734KHz

In order to eliminate the “Video SYNC Frequency”, “LPF” and “TRAP” are combined to “LPF”.

5) PB AMP

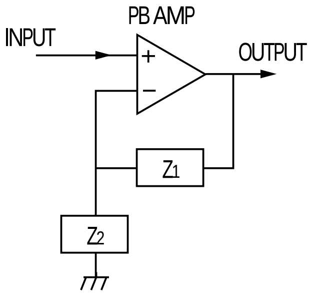


Fig. 14-27 PB Amp

The diagram to the left is the playback amp and the gain input/output are as follows.

$$Av = 1 + \frac{Z_1}{Z_2} \approx \frac{Z_1}{Z_2}$$

The playback characteristic of VHS format can be satisfied by using Z_1, Z_2 in the above equation.
PB amp gain should be designed to be approximately 45dB (1KHz).

6) REC AMP

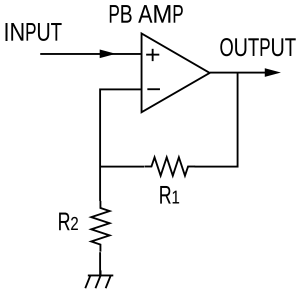


Fig. 14-28 REC Amp

The diagram to the left is REC AMP. The amp gain is approximately 14dB.
R_1 and R_2 that determine the gain is located inside the IC.
It is uniform and independent to frequency. Frequency characteristics should be considered when designing rec amp. The REC amp should be the opposite to playback characteristics.

7) OSC (Oscillation)

Oscillation frequency is 70KHz. It’s size is approximately 45Vp-p. it operates on recoed mode. It is supplied to audio erase head and full erase head used to erase already recorded signals.
Also, it conducts “AM (Amplitude Modulation)” using oscillation signals.

8) BIAS Control

Oscillation coil is used in oscillation Bias. Coil output changes according to the impedance of F/E, A/E and R/P head connected to the coil.

9) 60KHz HPF

There must be standard signal for bias control and that signal uses HPF only to obtain oscillation signal that comes through R/P head.

10) S/W

The switch opens when recording, shorts during playback and exterior transister is used.

(3) Pin Port Description (IC301 ; LA71207M)

PIN NO.	PIN NAME	DC VOLT.	SIGNAL	REMARK
9	REC OUT	2.3	-2dBm	REC AMP OUTPUT (GAIN ; 14dB)
75	GND	0	-	
6	BIAS	REC:2.3 PB:0	70KHz+1KHz MIX 3Vp-p	It is grounded due to the switch inside of IC during playback. During recording, it operates on 60KHz input HPF
11	BIAS CTL	REC:4.3V PB:5V	-	The BIAS CTL voltage change depends on the external TR.
6	PB EQ (+)	2.3	-	PB EQ AMP INPUT (+)
5	PB EQ (-)	2.3	-	PB EQ AMP INPUT (-)
7	PB EQ SW	2.3	-	PB EQ AMP SLP SW
3	PB EQ OUT	2.3	-32dBm	PB EQ AMP OUTPUT
2	LINE PB IN	2.3	-32dBm	LINE AMP INPUT (PB)
58	A.MUTE	0	-	Operates at HIGH (5V)
76	INPUT 1	2.3	-27dBm	AUDIO INPUT : -27dBm
78	INPUT 2	2.3	-27dBm	AUDIO INPUT : -27dBm
1	Vref Filter	2.3	-	
80	Input 3	2.3	-27dBm	AUDIO INPUT : -27dBm
77	Vcc	5.0	-	
10	Line Out	2.3	-4dBm	AUDIO OUTPUT : -4dBm
79	ALC IN	2.3	-13dBm	ALC level selector

14-14 TM

(1) Outline

RF and frequency synthesized tuning system

General description : The receiving circuit consists of both ANT input and output circuits, channel selection circuit, PIF circuit and SIF circuit. The receiving circuit selects a desired broadcast signal from TV signals induced on an antenna and sends stable video and audio signals to their respective processing circuits.

(2) Tuner modulator block

As explained, this model is designed in one package to contain a RF MODULATOR BLOCK, TUNER BLOCK AND IF DEMODULATOR BLOCK. Its size is greatly reduced and other noise interference can be minimized to make performance high.

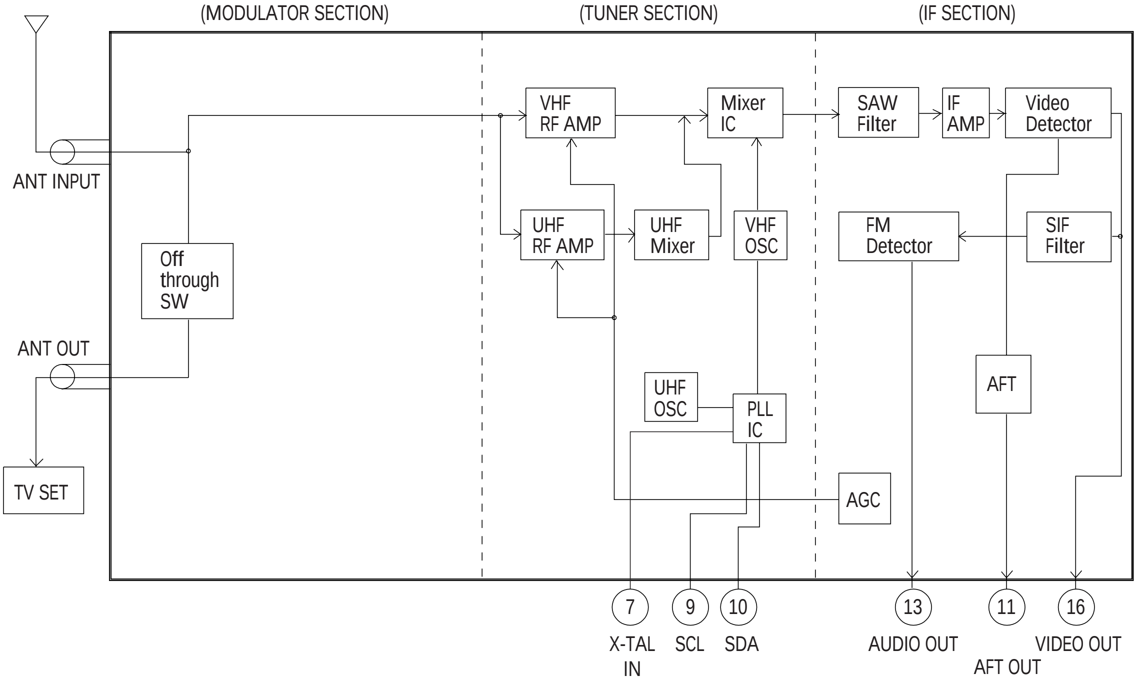

(MODULATOR SECTION)
(TUNER SECTION)
(IF SECTION)
ANT INPUT
ANT OUT
TV SET
Off through SW
VHF RF AMP
Mixer IC
UHF RF AMP
UHF Mixer
VHF OSC
UHF OSC
PLL IC
SAW Filter
IF AMP
Video Detector
FM Detector
SIF Filter
AFT
AGC
7
9
10
13
11
16
X-TAL IN
SCL
SDA
AUDIO OUT
AFT OUT
VIDEO OUT

Fig. 14-29 Tuner/demodulator Block Diagram

(3) Tuner Block

A. Low pass filter & high pass filter

This consists of IF trap circuit and UHF & VHF separation circuit. If the input signal is IF(45.75MHz), this filter prevents interference.

B. Single tune & RF AMP

This consists of a filter circuit, RF AMP, impedance conversion circuit, image trap and a single tuning circuit. It prevents noise and other interference signals. RF AMP is controlled by AGC come from IF DEMOD block.

C. Double tune

It consists of a double tuning circuit to improve rejection characteristic which results in a better band characteristic.

D. MOP IC (Mixer, OSC, PLL)

It consists a VHS and UHF OSC and mixer circuit. We applied a double balance mixer to have better rejection characteristic, it shows especially various beat characteristic.

It serects channels and contains charge pump band driver. The minimum step standard frequency 31.25KHZ.

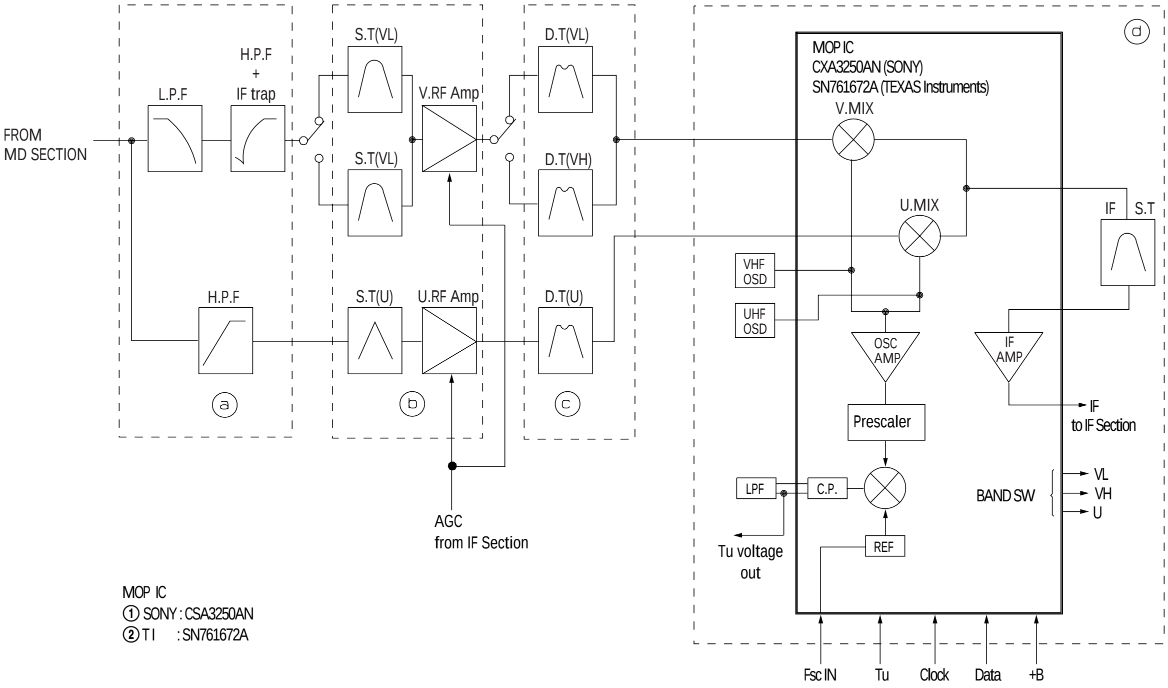

FROM
MD SECTION
L.P.F
H.P.F
+
IF trap
H.P.F
ⓐ
S.T(VL)
S.T(VL)
S.T(U)
V.RF Amp
U.RF Amp
ⓑ
AGC
from IF Section
D.T(VL)
D.T(VH)
D.T(U)
ⓒ
ⓓ
MOP IC
CXA3250AN (SONY)
SN761672A (TEXAS Instruments)
V.MIX
U.MIX
VHF OSD
UHF OSD
OSC AMP
IF AMP
IF
S.T
IF
to IF Section
Prescaler
LPF
C.P.
REF
BAND SW
VL
VH
U
Tu voltage
out
Fsc IN
Tu
Clock
Data
+B
MOP IC
① SONY : CSA3250AN
② T I : SN761672A

Fig. 14-30 Tuner Section Block Diagram

(4) IF Block

A. SAW FILTER

It passes only needed band of the signal that is converted to IF frequency and decrease other band to minimize the effect of adjacent channel.

B. IF AMP

IF signal ,which is selected in SAW FILTER, is amplified in IF amp frequency enough to be detected. The IF AMP has parallel inputs & outputs structure and consists of 3 series step AMP.Each step has about 20dB gains.These gains are controlled by AGC voltage has maximum 63dB attenuation range.

C. RF AGC CONTROL

It is adjusted to determine RF AGC working point in tuner.

D. FM DETECTOR

After removing AM signal in the limiter AMP ,amplified SIF signal is applied FM detector. This FM detector is PLL detecting type.

E. AFT DETECTER

AFT automatically controls the OSC frequency in the tuner, so that it retains a constant level.
It is a quadrature detection type. The carrier, which is detected from video det is directly input to AFT detector .
The 90 degree delayed phase signal is input at the same time to AFT detector and ,the results come out.
Detected AFT voltage is amplified by DC AMP and then applied to pin 13.

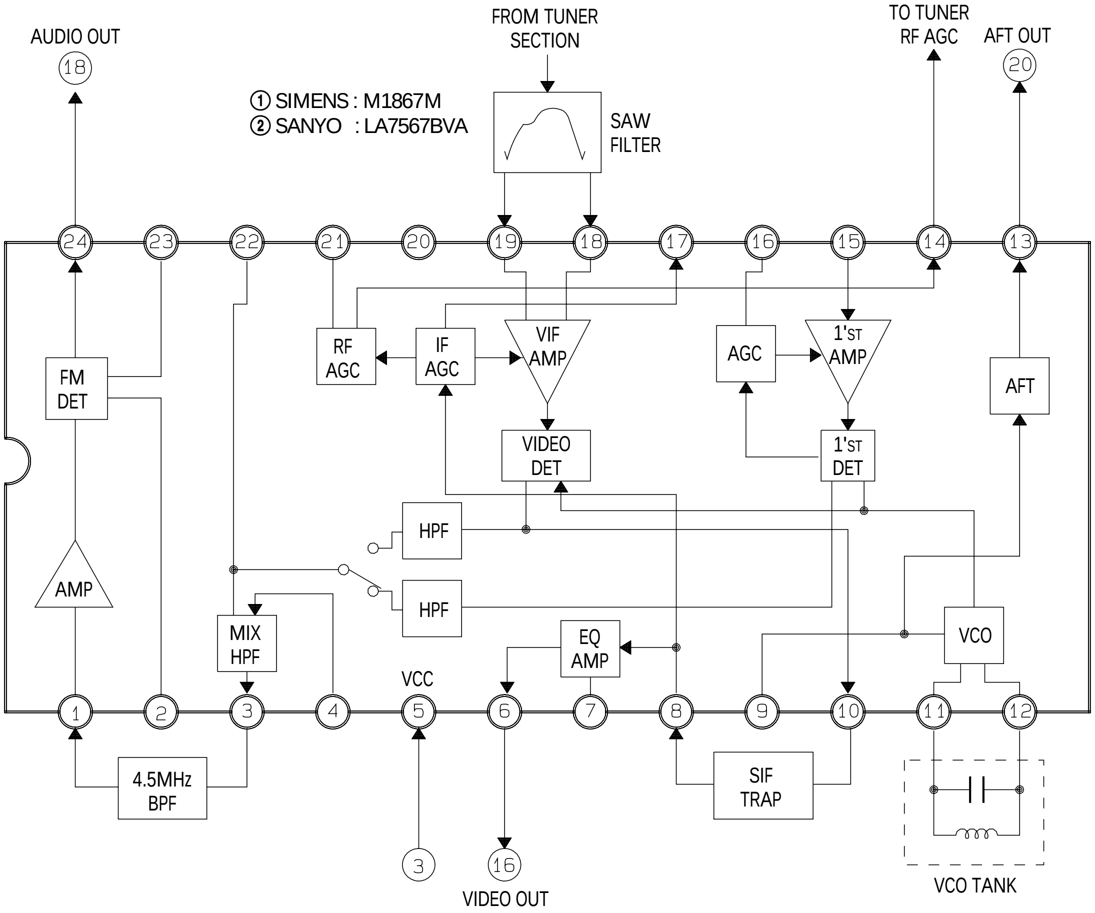

AUDIO OUT
18
FROM TUNER SECTION
① SIMENS : M1867M
② SANYO : LA7567BVA
SAW FILTER
TO TUNER RF AGC
AFT OUT
20
24
23
22
21
20
19
18
17
16
15
14
13
FM DET
RF AGC
IF AGC
VIF AMP
AGC
1'ST AMP
AFT
VIDEO DET
1'ST DET
HPF
AMP
HPF
MIX HPF
EQ AMP
VCO
VCC
1
2
3
4
5
6
7
8
9
10
11
12
4.5MHz BPF
SIF TRAP
3
16
VIDEO OUT
VCO TANK

Fig. 14-31 IF Ssection Block Diagram

14-15 OSD

The on screen display circuit consist of a character generator decoder, video mixer, sync separator and sync generator, sync detector circuit.

The data is decoded and generates characters in syncro with composite video signal applied pin 49, 50.

Also the sync detector circuit discriminates the presence of a video signal by detecting sync, if no sync is detected, a blue screen is displayed. In other word, the OSD circuit displays character on the video when there is a video signal or on blue screen when there is no video signal. (No sync).

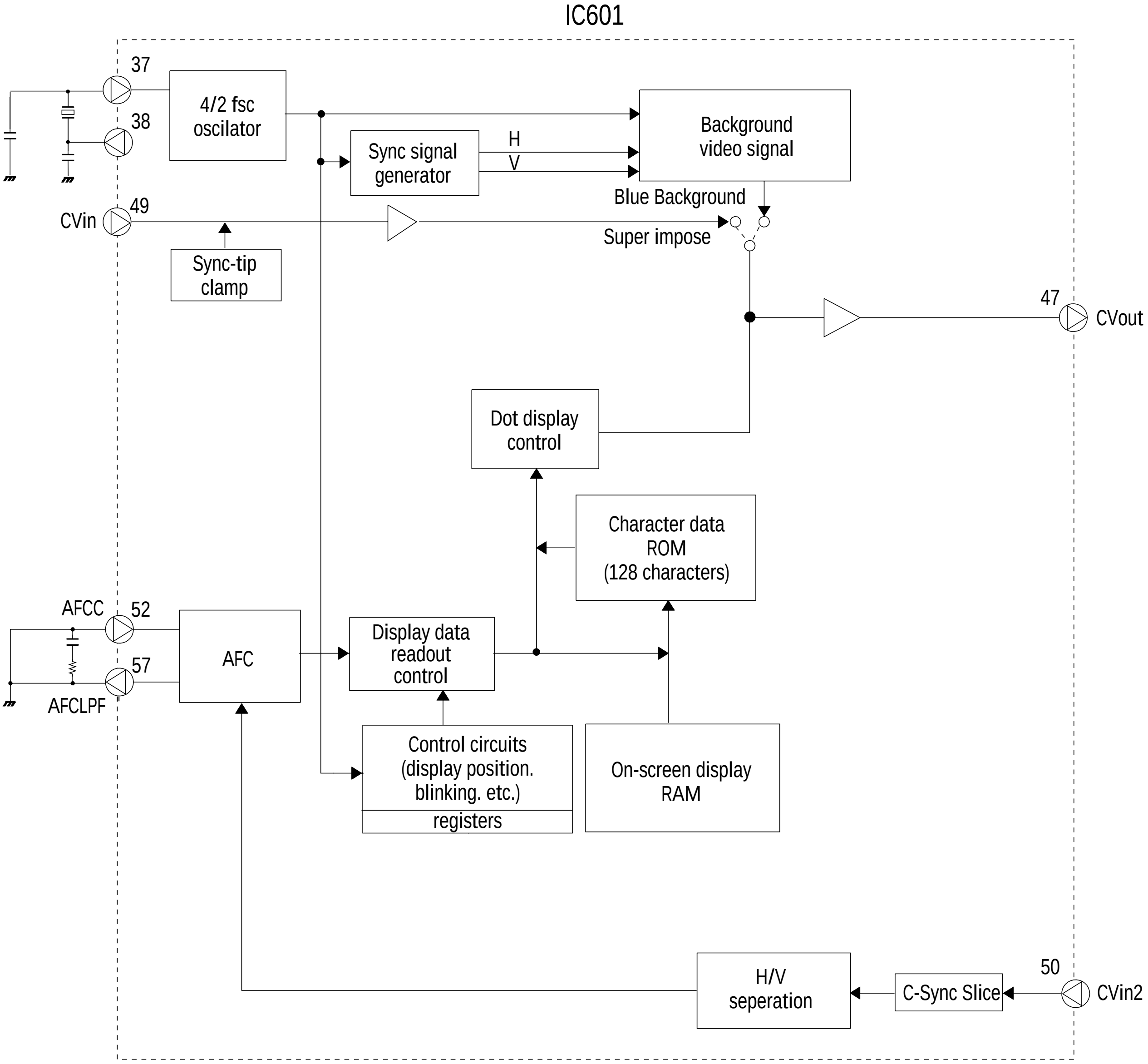

IC601
37
38
4/2 fsc oscilator
Sync signal generator
H
V
Background video signal
Blue Background
Super impose
49
CVin
Sync-tip clamp
47
CVout
Dot display control
Character data ROM (128 characters)
AFCC
52
57
AFCLPF
AFC
Display data readout control
Control circuits (display position. blinking. etc.)
registers
On-screen display RAM
H/V seperation
C-Sync Slice
50
CVin2

Fig. 14-32 Block Diagram

MEMO

TOSHIBA CORPORATION

1 1, SHIBAURA 1 CHOME, MINATO KU, TOKYO 105 8001, JAPAN

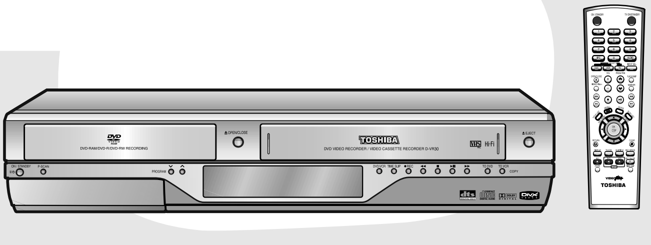
TOSHIBA

FILE NO. 810-200550

SERVICE MANUAL

DVD RECORDER & VCR

D-VR15SB
D-VR25SB
D-VR35SB
D-VR30SF
D-VR30SG



Issued in Japan.,June., 2005 Ⓢ

9. Block Diagrams

9-1 All Block Diagram- 9-2

9-2 AIC1(PCM1753) Audio DA Block Diagram - 9-3

9-3 AIC9(PCM1802) Audio AD Block Diagram - 9-4

9-4 DIC1(DMN8602) A/V Codec Block Diagram- 9-5

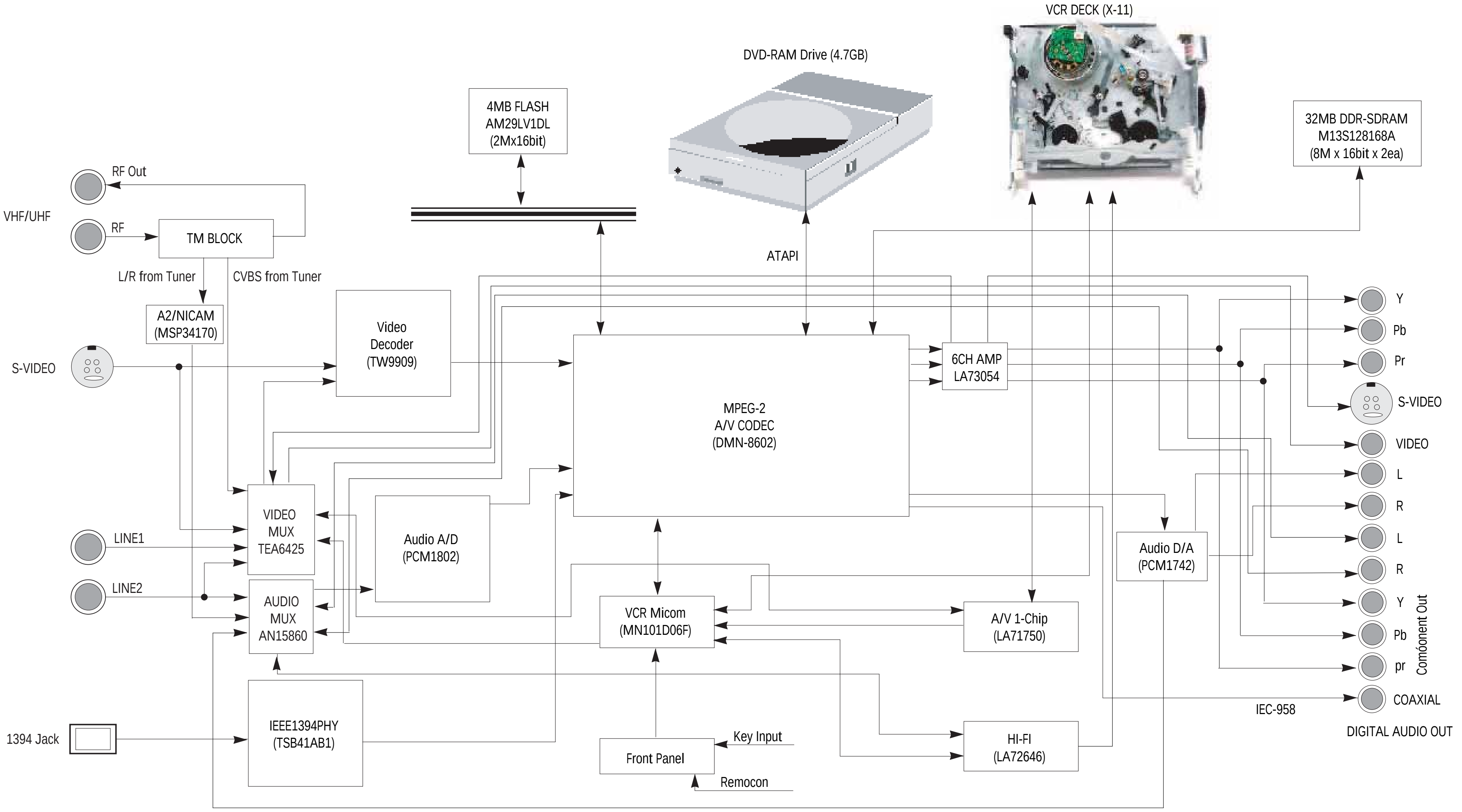
9-5 DIC3(29DL323) Flash Memory Block Diagram - 9-6

9-6 IC801(TEA6425)Typical Application Block Diagram - - - - - - - - - - - - - - - - - - 9-7

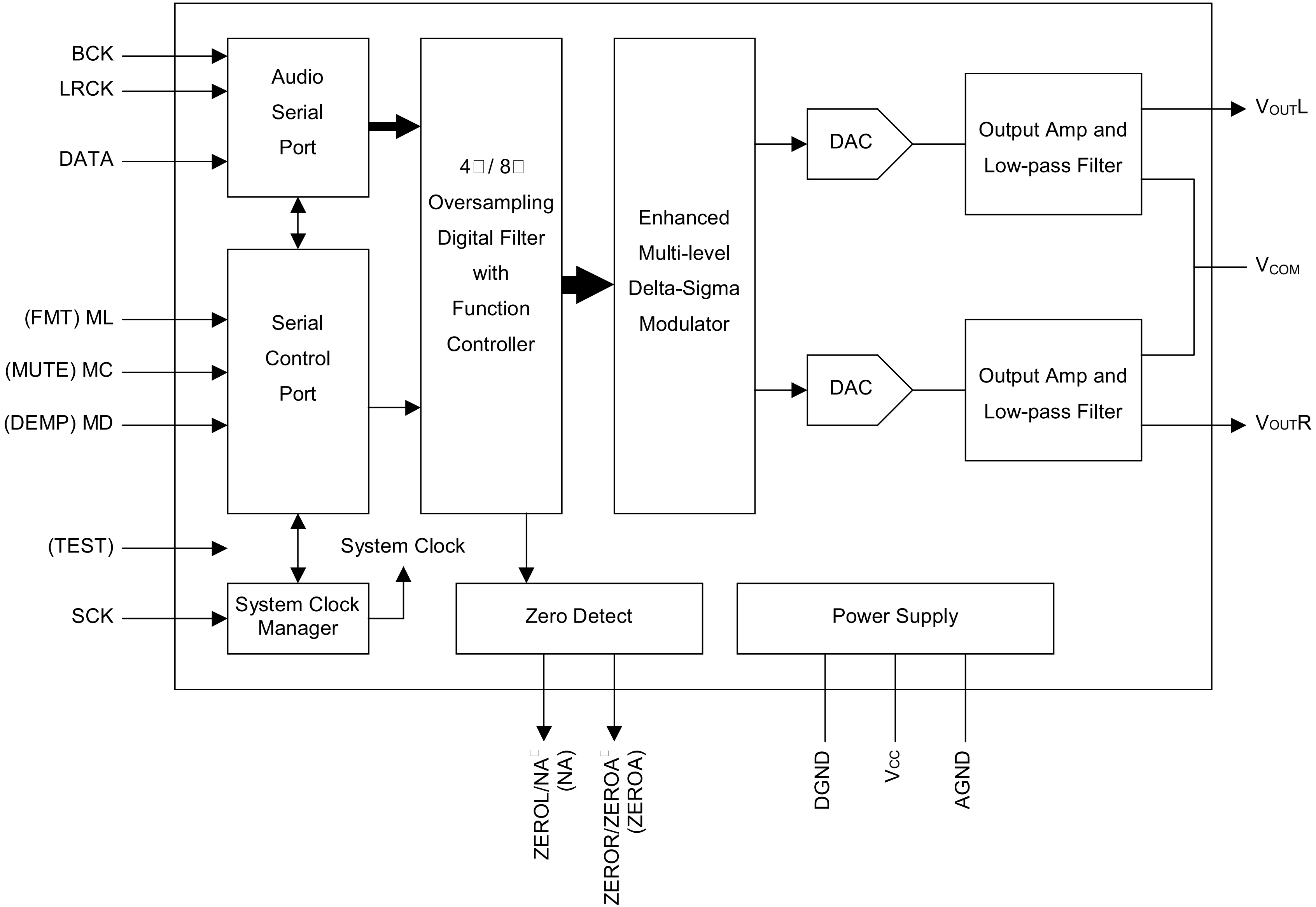
9-7 TIC1(TW9909) Video Decoder Block Diagram - 9-8

9-8 U23(M13S128168A) DRAM Block Diagram- 9-9

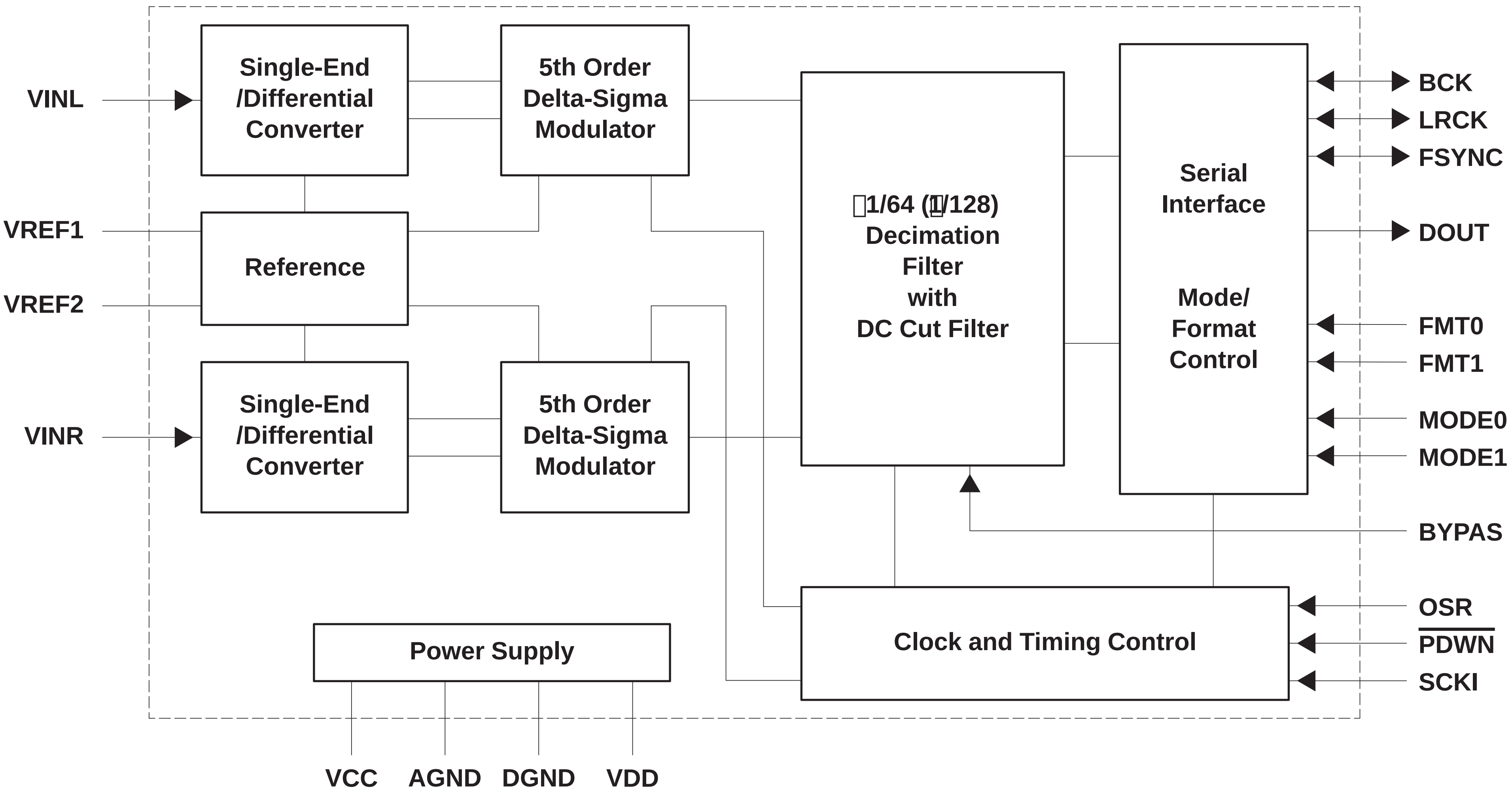
9-1 All Block Diagram


VCR DECK (X-11)
DVD-RAM Drive (4.7GB)
4MB FLASH
AM29LV1DL
(2Mx16bit)
32MB DDR-SDRAM
M13S128168A
(8M x 16bit x 2ea)
RF Out
VHF/UHF
RF
TM BLOCK
L/R from Tuner
CVBS from Tuner
ATAPI
A2/NICAM
(MSP34170)
Video
Decoder
(TW9909)
S-VIDEO
MPEG-2
A/V CODEC
(DMN-8602)
6CH AMP
LA73054
Y
Pb
Pr
S-VIDEO
VIDEO
L
R
L
R
Y
Pb
pr
Comónent Out
COAXIAL
IEC-958
DIGITAL AUDIO OUT
VIDEO
MUX
TEA6425
LINE1
LINE2
AUDIO
MUX
AN15860
Audio A/D
(PCM1802)
Audio D/A
(PCM1742)
VCR Micom
(MN101D06F)
A/V 1-Chip
(LA71750)
1394 Jack
IEEE1394PHY
(TSB41AB1)
Front Panel
Key Input
Remocon
HI-FI
(LA72646)

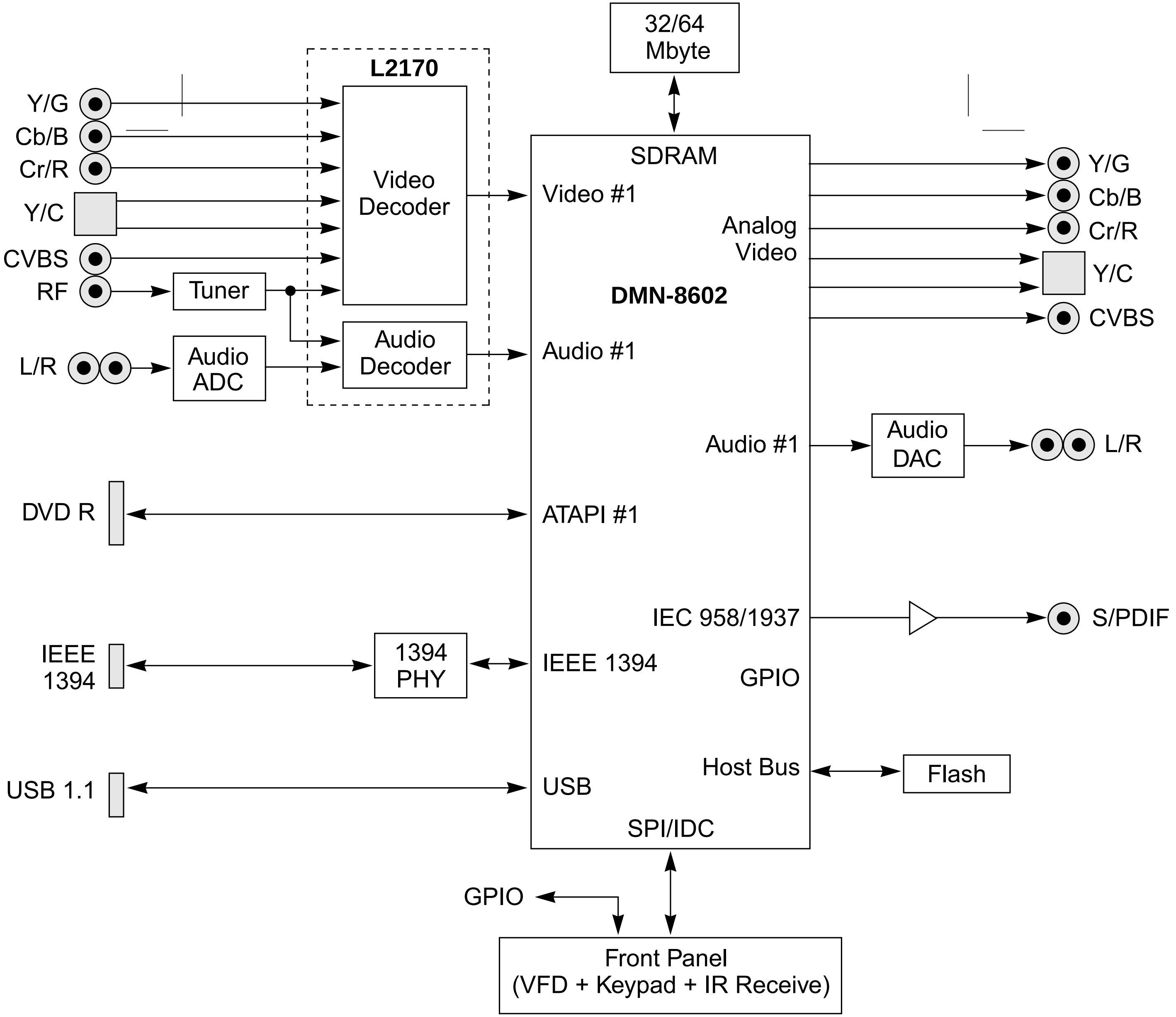
9-2 AIC1(PCM1753) Audio DA Block Diagram


BCK
LRCK
DATA
(FMT) ML
(MUTE) MC
(DEMP) MD
(TEST)
SCK
Audio Serial Port
Serial Control Port
System Clock Manager
System Clock
4□/ 8□ Oversampling Digital Filter with Function Controller
Enhanced Multi-level Delta-Sigma Modulator
DAC
DAC
Output Amp and Low-pass Filter
Output Amp and Low-pass Filter
VOUTL
VCOM
VOUTR
Zero Detect
Power Supply
ZEROL/NA□ (NA)
ZEROR/ZEROA□ (ZEROA)
DGND
VCC
AGND

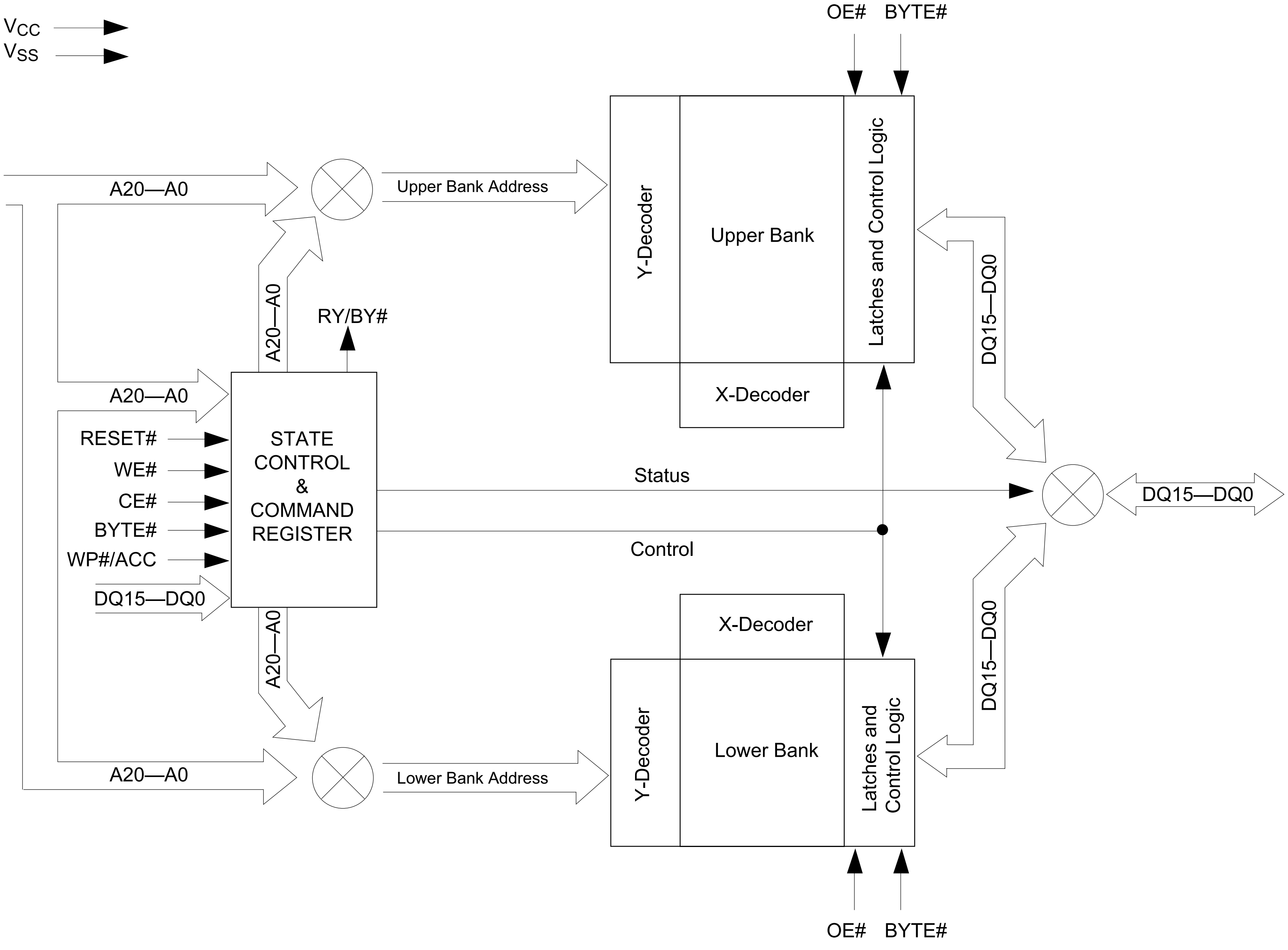
9-3 AIC9(PCM1802) Audio AD Block Diagram


VINL
VREF1
VREF2
VINR
Single-End /Differential Converter
Reference
Single-End /Differential Converter
5th Order Delta-Sigma Modulator
5th Order Delta-Sigma Modulator
1/64 (1/128) Decimation Filter with DC Cut Filter
Serial Interface
Mode/ Format Control
BCK
LRCK
FSYNC
DOUT
FMT0
FMT1
MODE0
MODE1
BYPAS
OSR
PDWN
SCKI
Clock and Timing Control
Power Supply
VCC
AGND
DGND
VDD

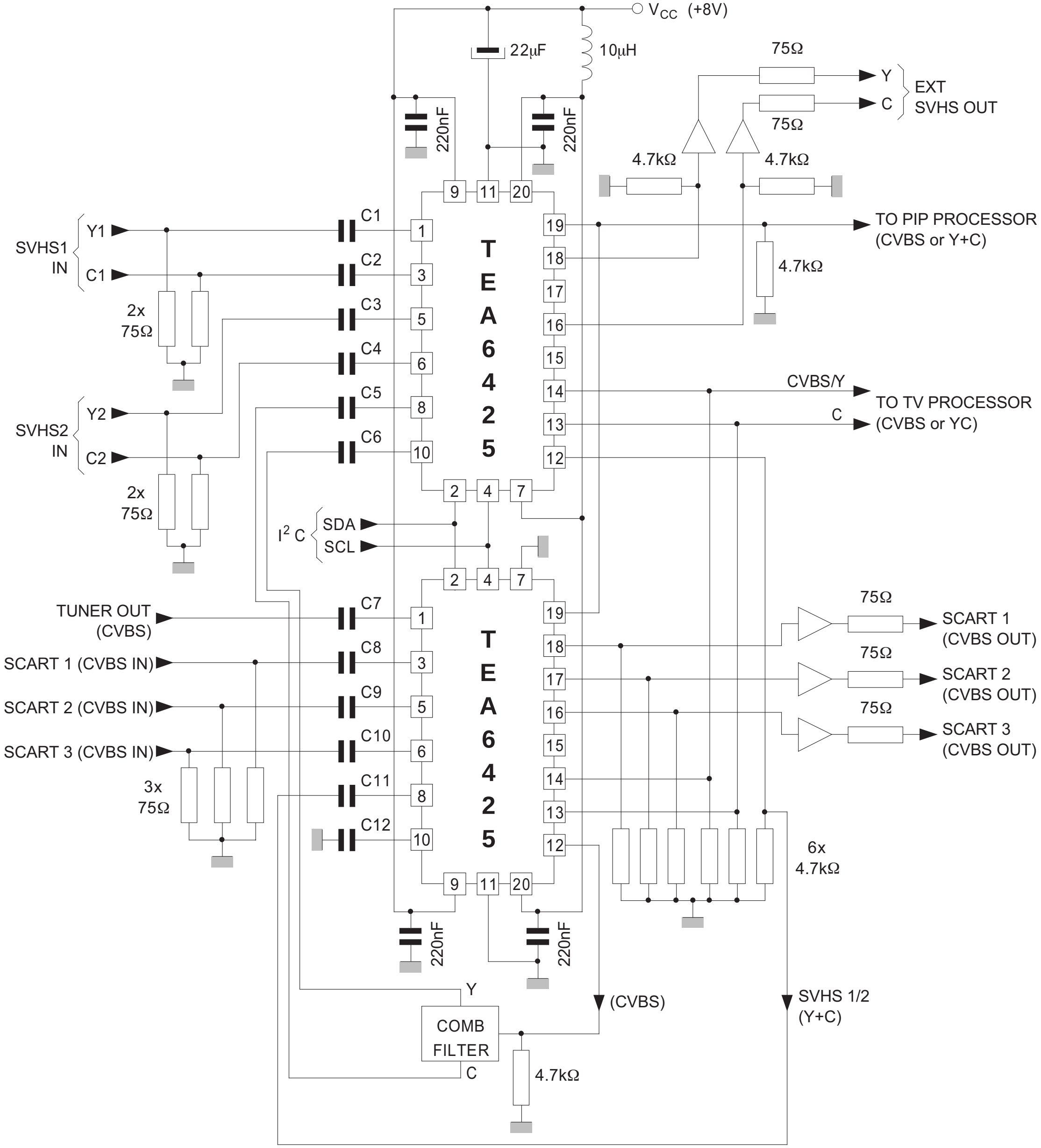
9-4 DIC1(DMN8602) A/V Codec Block Diagram


32/64
Mbyte
L2170
Y/G
Cb/B
Cr/R
Y/C
CVBS
RF
Tuner
L/R
Audio
ADC
Video
Decoder
Audio
Decoder
SDRAM
Video #1
Analog
Video
DMN-8602
Audio #1
Audio #1
ATAPI #1
IEC 958/1937
IEEE 1394
GPIO
Host Bus
USB
SPI/IDC
Y/G
Cb/B
Cr/R
Y/C
CVBS
Audio
DAC
L/R
S/PDIF
Flash
DVD R
IEEE
1394
1394
PHY
USB 1.1
GPIO
Front Panel
(VFD + Keypad + IR Receive)

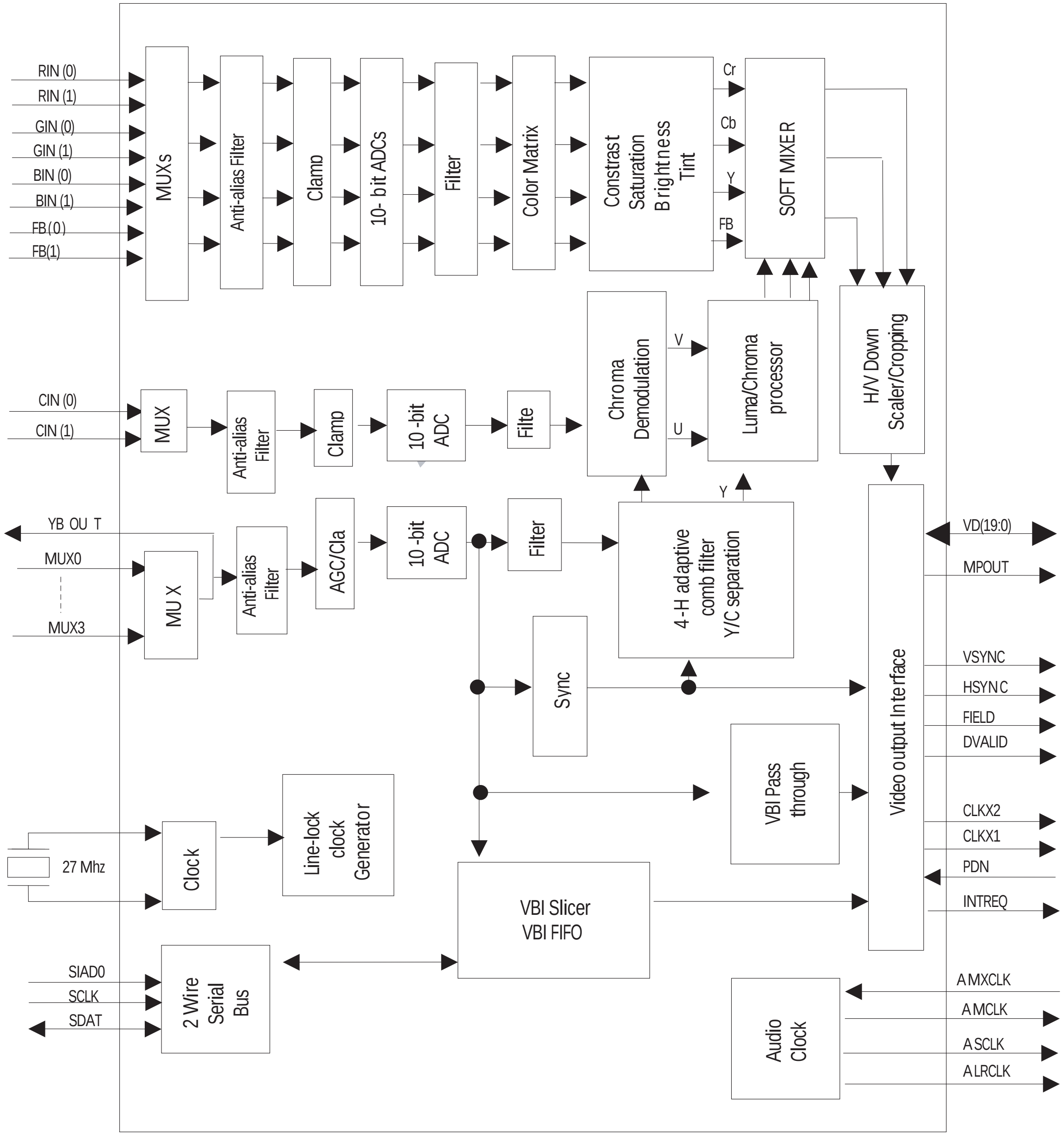
9-5 DIC3(29DL323) Flash Memory Block Diagram


VCC
VSS
OE#
BYTE#
A20—A0
Upper Bank Address
Y-Decoder
Upper Bank
Latches and Control Logic
X-Decoder
DQ15—DQ0
A20—A0
RY/BY#
A20—A0
RESET#
WE#
CE#
BYTE#
WP#/ACC
DQ15—DQ0
STATE CONTROL & COMMAND REGISTER
Status
Control
DQ15—DQ0
A20—A0
X-Decoder
DQ15—DQ0
Y-Decoder
Lower Bank
Latches and Control Logic
A20—A0
Lower Bank Address
OE#
BYTE#

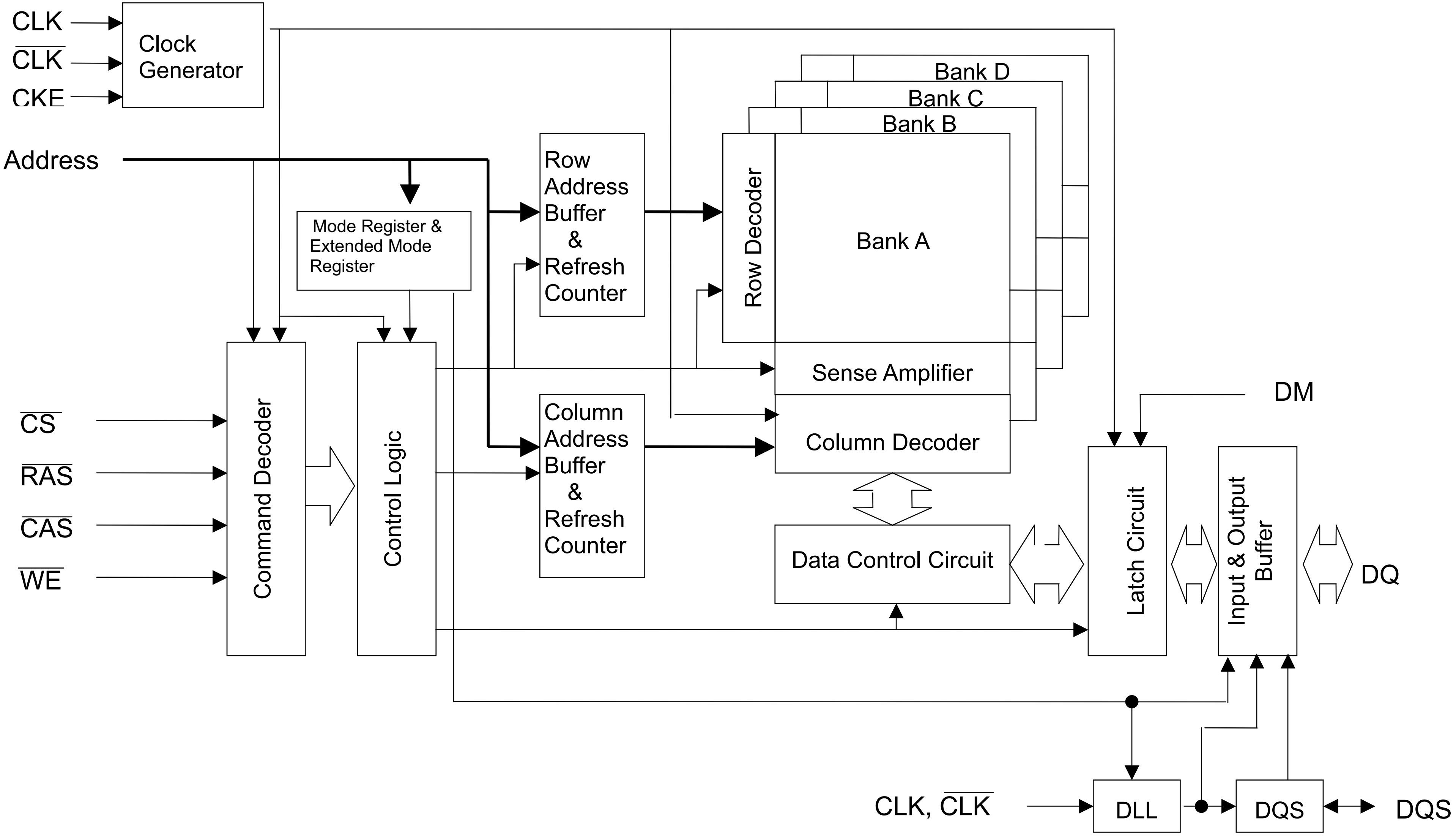
9-6 IC801(TEA6425)Typical Application Block Diagram


V$_{CC}$ (+8V)
22µF
10µH
75Ω
Y
C
EXT
SVHS OUT
75Ω
220nF
220nF
4.7kΩ
4.7kΩ
9
11
20
TO PIP PROCESSOR
(CVBS or Y+C)
SVHS1
IN
Y1
C1
C1
C2
C3
C4
C5
C6
1
3
5
6
8
10
19
18
17
16
15
14
13
12
TEA6425
4.7kΩ
2x
75Ω
CVBS/Y
C
TO TV PROCESSOR
(CVBS or YC)
SVHS2
IN
Y2
C2
2x
75Ω
2
4
7
I^2 C
SDA
SCL
TUNER OUT
(CVBS)
SCART 1 (CVBS IN)
SCART 2 (CVBS IN)
SCART 3 (CVBS IN)
3x
75Ω
C7
C8
C9
C10
C11
C12
TEA6425
75Ω
SCART 1
(CVBS OUT)
75Ω
SCART 2
(CVBS OUT)
75Ω
SCART 3
(CVBS OUT)
6x
4.7kΩ
220nF
220nF
Y
COMB
FILTER
C
4.7kΩ
(CVBS)
SVHS 1/2
(Y+C)

9-7 TIC1(TW9909) Video Decoder Block Diagram

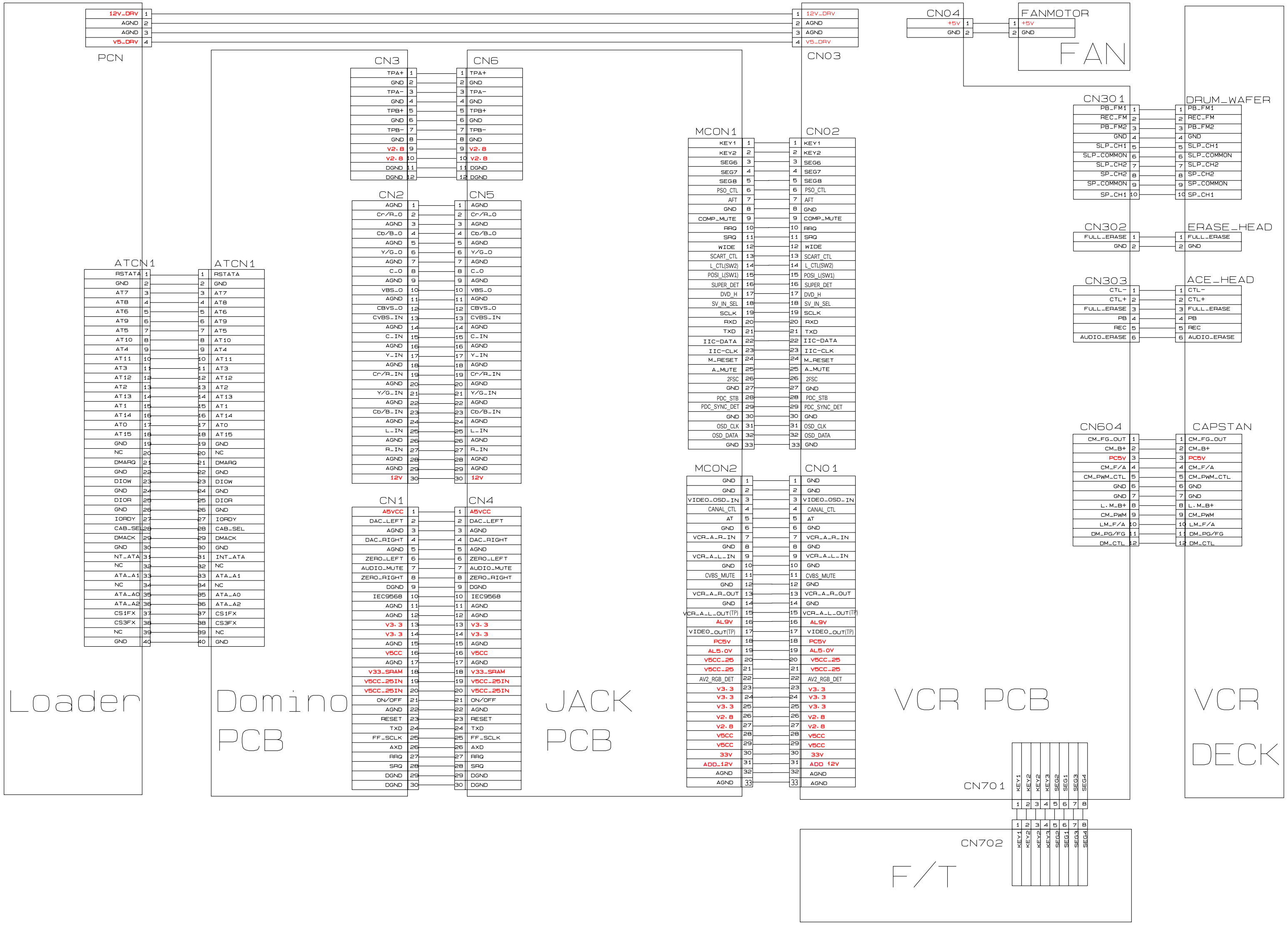

RIN (0)
RIN (1)
GIN (0)
GIN (1)
BIN (0)
BIN (1)
FB (0)
FB(1)
MUXs
Anti-alias Filter
Clamp
10- bit ADCs
Filter
Color Matrix
Constrast
Saturation
Brightness
Tint
Cr
Cb
Y
FB
SOFT MIXER
H/V Down
Scaler/Cropping
CIN (0)
CIN (1)
MUX
Anti-alias
Filter
Clamp
10 -bit
ADC
Filte
Chroma
Demodulation
V
U
Luma/Chroma
processor
Y
YB OUT
MUX0
MUX3
MU X
Anti-alias
Filter
AGC/Cla
10 -bit
ADC
Filter
4-H adaptive
comb filter
Y/C separation
Sync
Video output Interface
VD(19:0)
MPOUT
VSYNC
HSYNC
FIELD
DVALID
VBI Pass
through
CLKX2
CLKX1
PDN
INTREQ
27 Mhz
Clock
Line-lock
clock
Generator
VBI Slicer
VBI FIFO
SIAD0
SCLK
SDAT
2 Wire
Serial
Bus
AMXCLK
AMCLK
ASCLK
ALRCLK
Audio
Clock

9-8 U23(M13S128168A) DRAM Block Diagram


CLK
CLK
CKE
Clock Generator
Address
Mode Register & Extended Mode Register
Row Address Buffer & Refresh Counter
Bank D
Bank C
Bank B
Row Decoder
Bank A
Sense Amplifier
Column Decoder
DM
CS
RAS
CAS
WE
Command Decoder
Control Logic
Column Address Buffer & Refresh Counter
Data Control Circuit
Latch Circuit
Input & Output Buffer
DQ
CLK, CLK
DLL
DQS
DQS

MEMO

10. Wiring Diagram


Loader
Domino PCB
JACK PCB
VCR PCB
VCR DECK
FAN
F/T
PCN
CN03
12V_DRV, AGND, AGND, V5_DRV
CN04
FANMOTOR
+5V, GND
ATCN1
RSTATA, GND, AT7, AT8, AT6, AT9, AT5, AT10, AT4, AT11, AT3, AT12, AT2, AT13, AT1, AT14, AT0, AT15, GND, NC, DMARQ, GND, DIOW, GND, DIOR, GND, IORDY, CAB_SEL, DMACK, GND, INT_ATA, NC, ATA_A1, NC, ATA_A0, ATA_A2, CS1FX, CS3FX, NC, GND
CN3
CN6
TPA+, GND, TPA-, GND, TPB+, GND, TPB-, GND, V2.8, V2.8, DGND, DGND
CN2
CN5
AGND, Cr/R_O, AGND, Cb/B_O, AGND, Y/G_O, AGND, C_O, AGND, VBS_O, AGND, CBVS_O, CVBS_IN, AGND, C_IN, AGND, Y_IN, AGND, Cr/R_IN, AGND, Y/G_IN, AGND, Cb/B_IN, AGND, L_IN, AGND, R_IN, AGND, AGND, 12V
CN1
CN4
A5VCC, DAC_LEFT, AGND, DAC_RIGHT, AGND, ZERO_LEFT, AUDIO_MUTE, ZERO_RIGHT, DGND, IEC958, AGND, AGND, V3.3, V3.3, AGND, V5CC, AGND, V33_SRAM, V5CC_25IN, V5CC_25IN, ON/OFF, AGND, RESET, TXD, FF_SCLK, AXD, ARQ, SRQ, DGND, DGND
MCON1
CN02
KEY1, KEY2, SEG6, SEG7, SEG8, PSO_CTL, AFT, GND, COMP_MUTE, ARQ, SRQ, WIDE, SCART_CTL, L_CTL(SW2), POSI_L(SW1), SUPER_DET, DVD_H, SV_IN_SEL, SCLK, RXD, TXD, IIC-DATA, IIC-CLK, M_RESET, A_MUTE, 2FSC, GND, PDC_STB, PDC_SYNC_DET, GND, OSD_CLK, OSD_DATA, GND
MCON2
CN01
GND, GND, VIDEO_OSD_IN, CANAL_CTL, AT, GND, VCR_A_R_IN, GND, VCR_A_L_IN, GND, CVBS_MUTE, GND, VCR_A_R_OUT, GND, VCR_A_L_OUT(TP), AL9V, VIDEO_OUT(TP), PC5V, AL5.0V, V5CC_25, V5CC_25, AV2_RGB_DET, V3.3, V3.3, V3.3, V2.8, V2.8, V5CC, V5CC, 33V, ADD_12V, AGND, AGND
CN301
DRUM_WAFER
PB_FM1, REC_FM, PB_FM2, GND, SLP_CH1, SLP_COMMON, SLP_CH2, SP_CH2, SP_COMMON, SP_CH1
CN302
ERASE_HEAD
FULL_ERASE, GND
CN303
ACE_HEAD
CTL-, CTL+, FULL_ERASE, PB, REC, AUDIO_ERASE
CN604
CAPSTAN
CM_FG_OUT, CM_B+, PC5V, CM_F/A, CM_PWM_CTL, GND, GND, L_M_B+, CM_PWM, LM_F/A, DM_PG/FG, DM_CTL
CN701
CN702
KEY1, KEY2, KEY2, KEY3, SEG2, SEG1, SEG3, SEG4

MEMO

11. PCB Diagrams

11-1 VCR Main PCB- 11-2

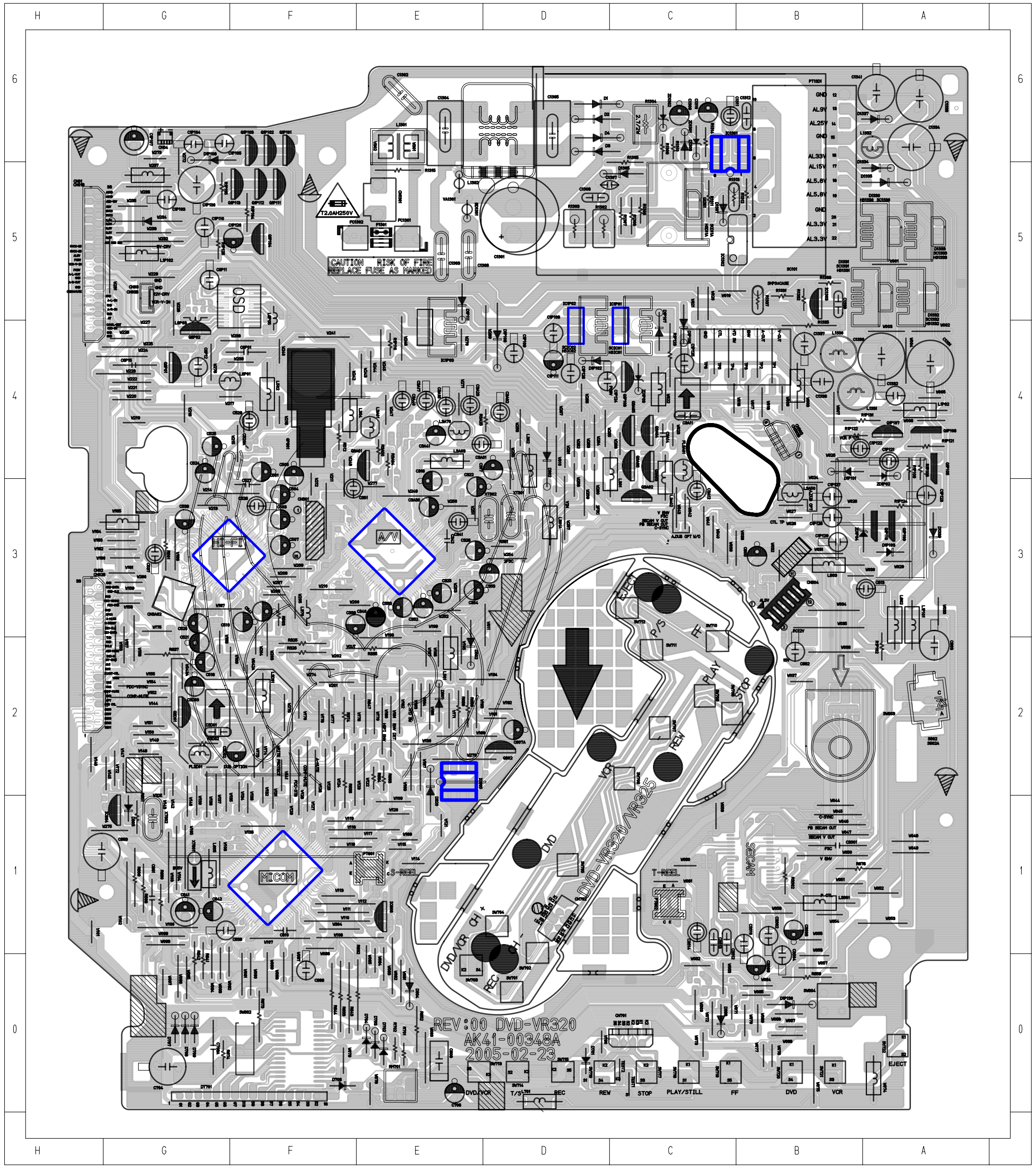
11-2 DVD Main PCB - 11-4

11-3 Jack PCB - 11-6

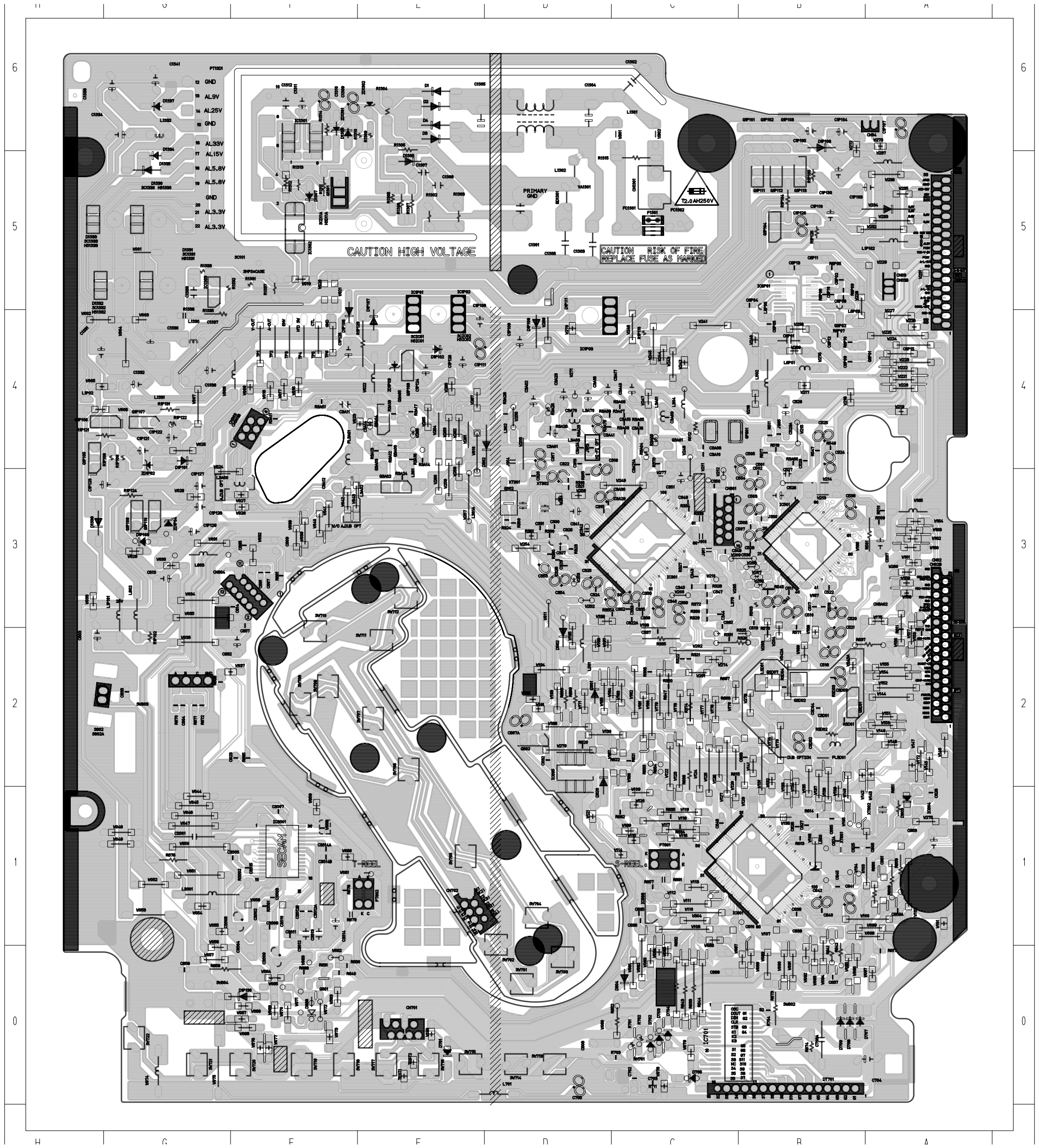
11-4 Function PCB - 11-8

11-1 VCR Main PCB

COMPONENT SIDE

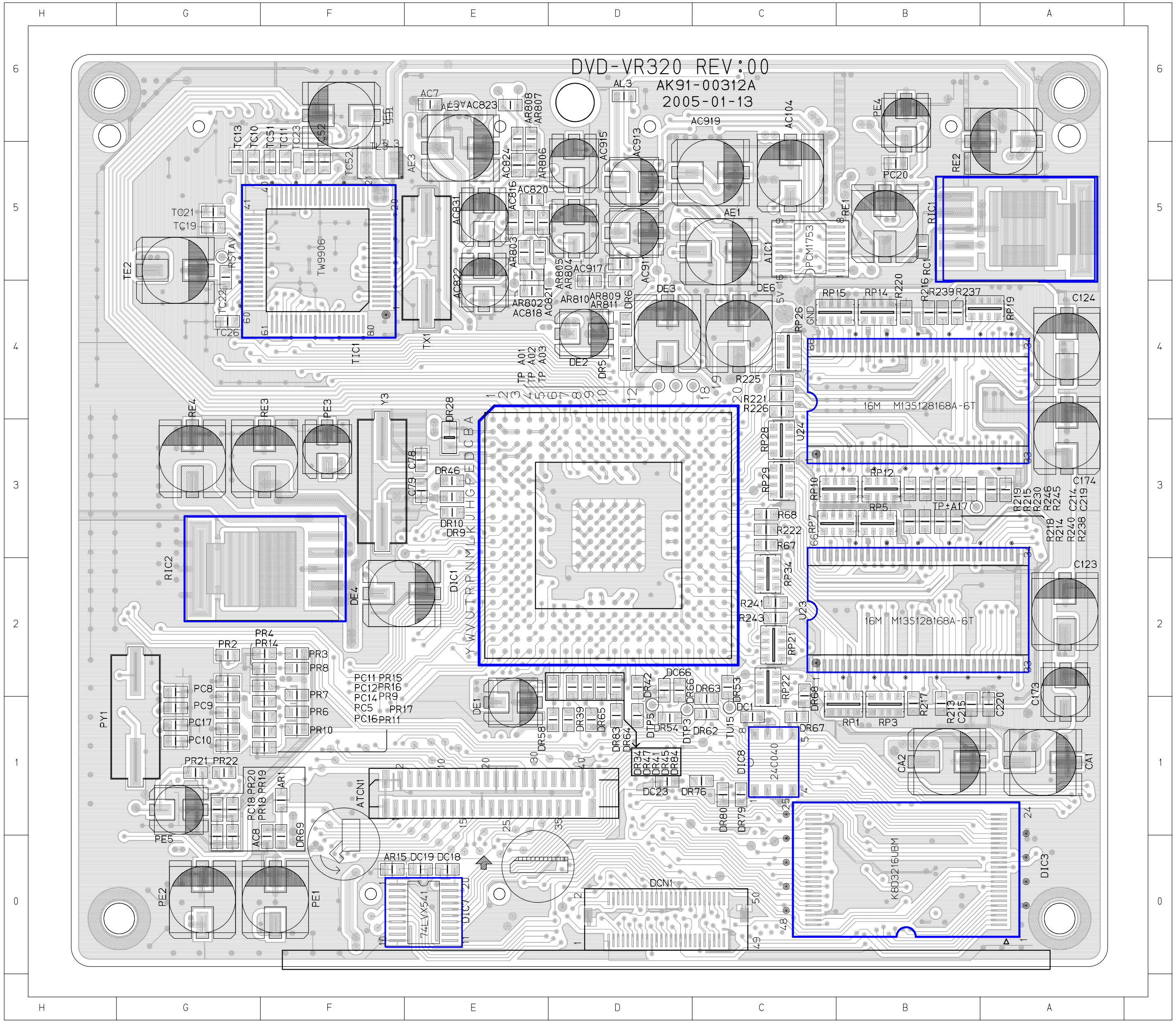

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
HI-FI
A/V
MICOM
OSD
CAUTION RISK OF FIRE
REPLACE FUSE AS MARKED
T2.0AH250V
EJECT
P/S
FF
PLAY
STOP
REW
VCR
DVD
DVD-VR320/VR325
DVD/VCR
CH
REC
T-REEL
S-REEL
REV:00 DVD-VR320
AK41-00348A
2005-02-23
REV
STOP
PLAY/STILL
FF
DVD
VCR
EJECT
T/S
REC
GND
AL9V
AL25V
GND
AL33V
AL15V
AL5.6V
AL5.6V
GND
AL3.3V
AL3.3V

CONDUCTOR SIDE

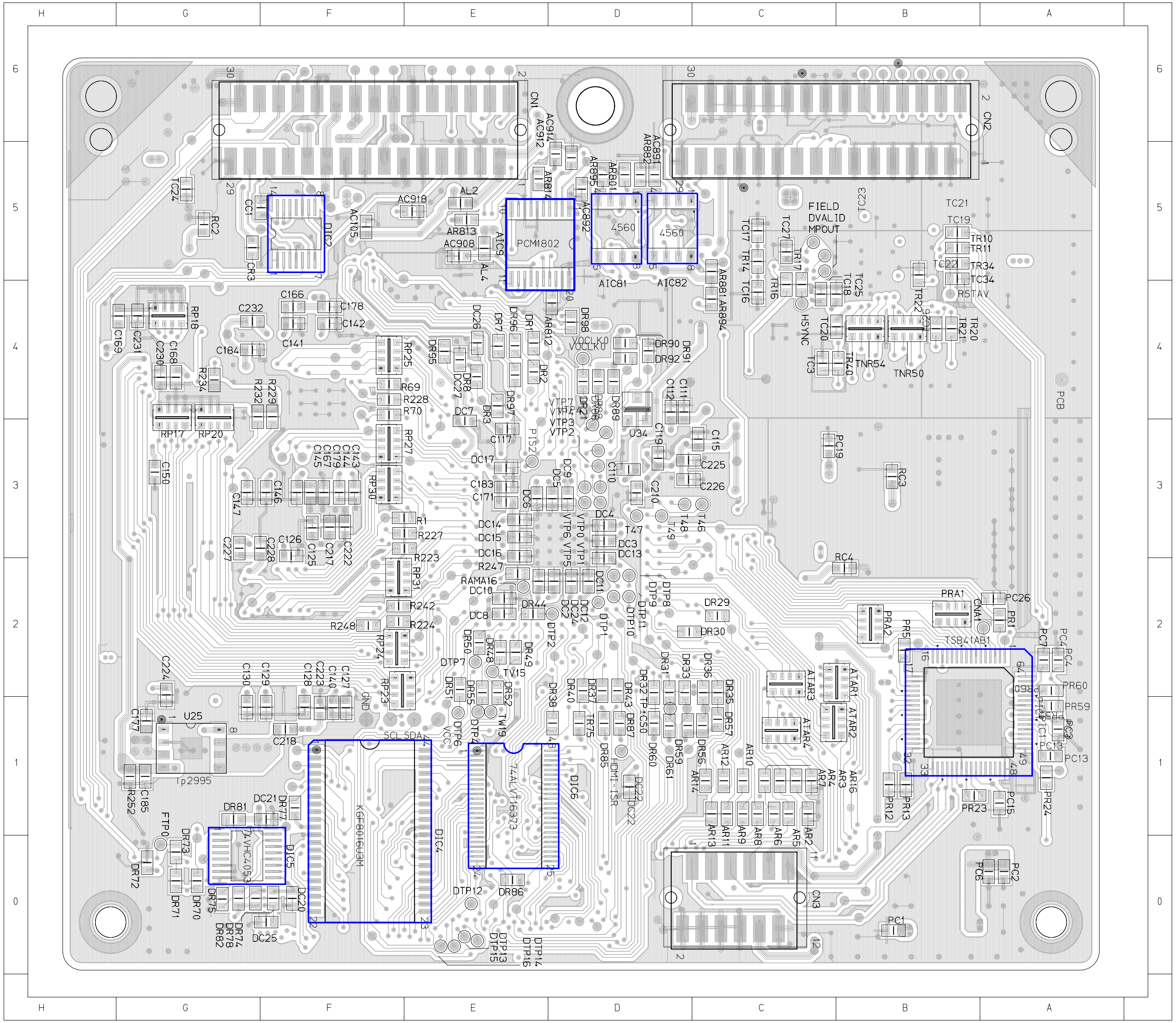

CAUTION HIGH VOLTAGE
CAUTION RISK OF FIRE
REPLACE FUSE AS MARKED
PRIMARY GND
T2.0AH250V
SECAM
GND
AL9V
AL25V
AL33V
AL15V
AL5.6V
AL3.3V
H
G
F
E
D
C
B
A
0
1
2
3
4
5
6

11-2 DVD Main PCB

COMPONENT SIDE

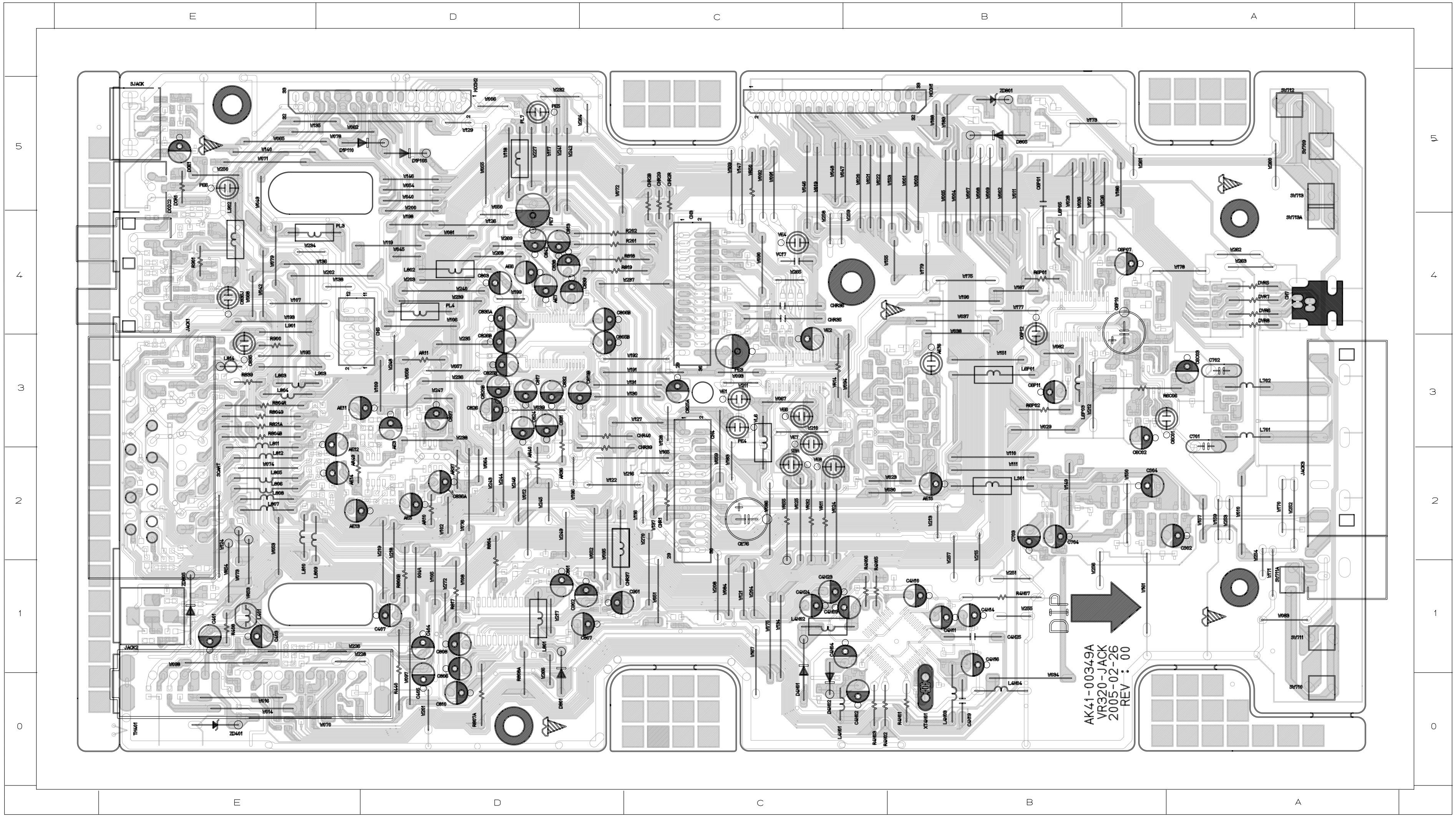

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
DVD-VR320 REV:00
AK91-00312A
2005-01-13
AL3
AC7
AC823
AR808
AR807
AC919
AC104
PE4
RE2
PC20
RE1
RIC1
TC13
TC10
TC51
TC11
TC23
TC52
AE3
AC824
AR806
AC915
AC913
AE1
AIC1
PCM1753
TW9906
TC21
TC19
TE2
TC26
TIC1
TX1
AC831
AC816
AC820
AR803
AC822
AR805
AR804
AC917
AR802
AC818
AR810
AR809
AR811
DR6
DE3
DE6
DE2
DR5
RP15
RP14
R220
R216
RC1
R239
R237
RP19
C124
RP26
R225
R221
R226
U24
16M M13S128168A-6T
RP28
RP29
RP12
RP10
RP5
TP+A17
R219
R215
R230
R246
R245
C174
C214
C219
R218
R214
R240
R238
R68
R222
RP7
R67
RP34
C123
R241
R243
U23
RP21
RE4
RE3
PE3
Y3
DR28
C78
C79
DR46
DR10
DR9
RIC2
DE4
DIC1
PR2
PR4
PR14
PR3
PR8
PR7
PR6
PR10
PC8
PC9
PC17
PC10
PY1
PC11
PR15
PC12
PR16
PC14
PR9
PC5
PR17
PC16
PR11
DE1
DR58
DR39
DR65
DR83
DR64
DR42
DC66
DR66
DR63
DR53
DTP5
DC1
DR54
DTP3
DR62
TU15
DR34
DR47
DR41
DR45
DR84
DIC8
24C040
DR67
DR68
RP22
RP1
RP3
R217
R213
C215
C220
C173
CA2
CA1
PR21
PR22
PR20
PR18
PR19
PC18
AR1
AC8
DR69
PE5
ATCN1
DC23
DR76
DR80
DR79
K8D3216UBM
DIC3
AR15
DC19
DC18
DCN1
74LVX541
DIC7
PE2
PE1

CONDUCTOR SIDE

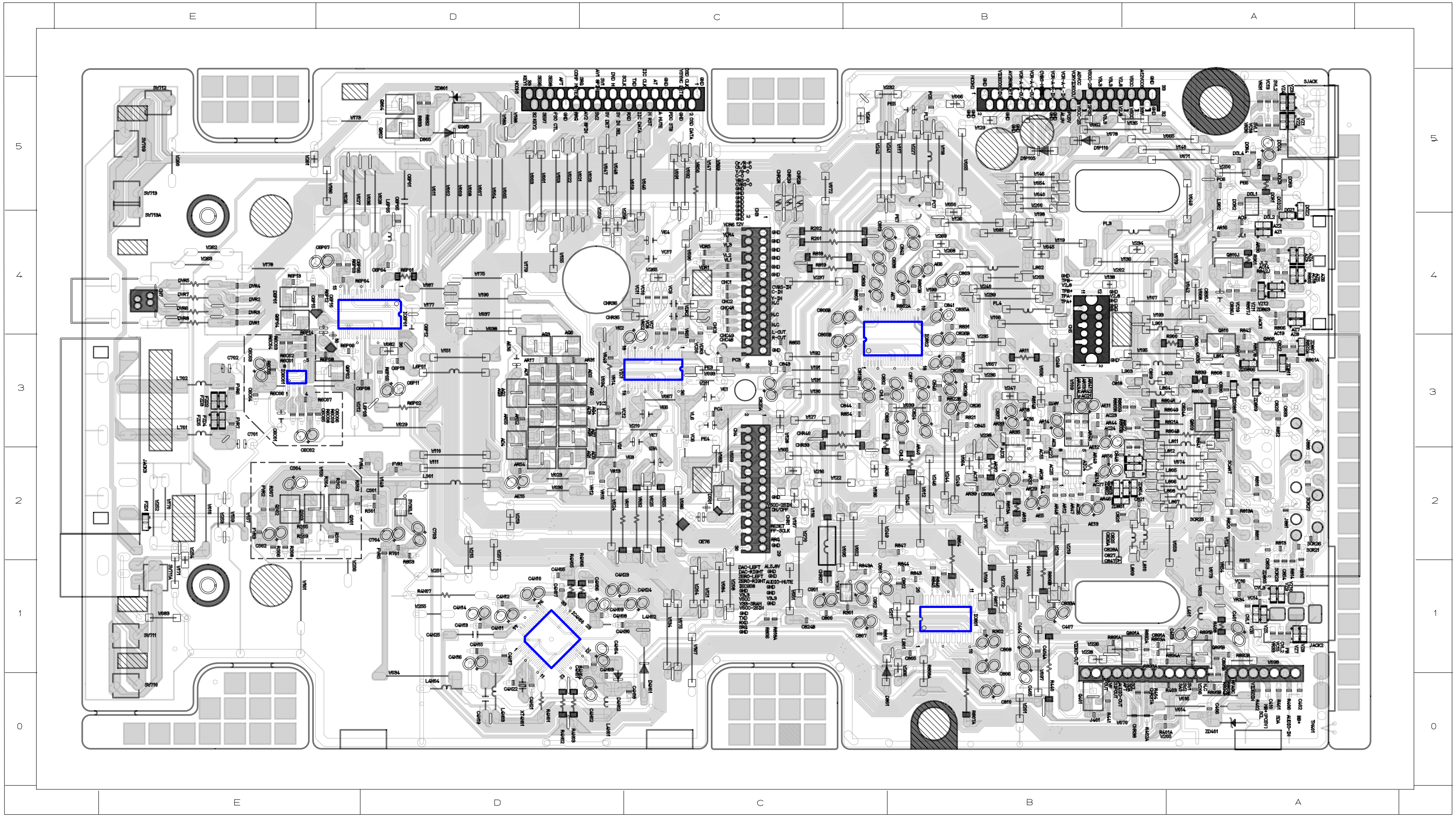

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
CN1
CN2
CN3
PCM1802
4560
4560
AIC81
AIC82
DIC2
DIC4
DIC5
DIC6
KSF0016U3M
74ALVT16373
74VHC4053
TSB41AB1
U25
Tp2995
U34
FIELD
DVALID
MPOUT
HSYNC
RSTAV
SCL
SDA
GND
VCC
VCLKO
VOCLKO
TNR50
TNR54
PRA1
PRA2
CNA1
ATAR1
ATAR2
ATAR3
ATAR4
RP17
RP18
RP20
RP23
RP24
RP25
RP27
RP30
RP31
RAMA16
DTP7
DTP12
DTP13
DTP14
DTP15
DTP16
TV15
PCB

11-3 Jack PCB

COMPONENT SIDE

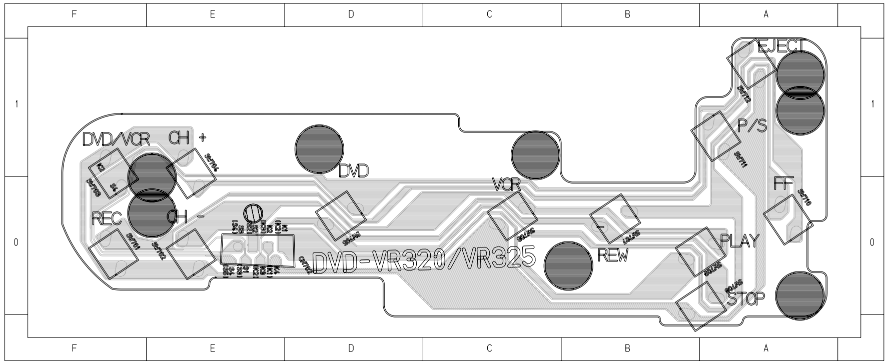

E
D
C
B
A
5
4
3
2
1
0
AK41-00349A
VR320-JACK
2005-02-26
REV : 00

CONDUCTOR SIDE

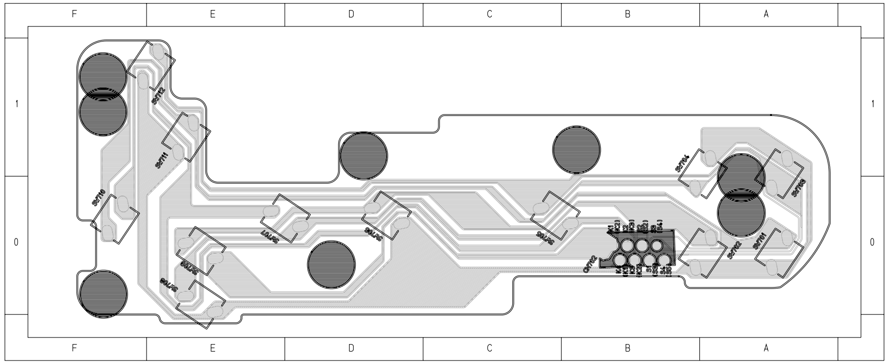

E
D
C
B
A
5
4
3
2
1
0

11-4 Function PCB

COMPONENT SIDE


F
E
D
C
B
A
1
0
EJECT
P/S
FF
PLAY
STOP
DVD/VCR
CH +
CH -
REC
DVD
VCR
REW
DVD-VR320/VR325

CONDUCTOR SIDE



12. Schematic Diagrams

◆ Block Identification of Main PCB - - - - 12-2
12-1 S.M.P.S (VCR Main PCB) - - - - 12-3
12-2 Power (VCR Main PCB) - - - - 12-4
12-3 Secam (VCR Main PCB) - - - - 12-5
12-4 A/V (VCR Main PCB) - - - - 12-6
12-5 Hi-Fi (VCR Main PCB) - - - - 12-7
12-6 E-Timer (VCR Main PCB) - - - - 12-8
12-7 OSD (VCR Main PCB) - - - - 12-9
12-8 System Control / Servo (VCR Main PCB) - - - - 12-10
12-9 Audio In/Out (DVD Main PCB) - - - - 12-11
12-10 Connector (DVD Main PCB) - - - - 12-12
12-11 DDR (DVD Main PCB) - - - - 12-13
12-12 DMN9602 (DVD PCB) - - - - 12-14
12-13 IEEE1394 (DVD PCB) - - - - 12-15
12-14 Video Decoder (DVD PCB) - - - - 12-16
12-15 A/V MUX (Jack PCB) - - - - 12-17
12-16 A2/NICAM (Jack PCB) - - - - 12-18
12-17 Scart (Jack PCB) - - - - 12-19
12-18 Audio Rca Output (Jack PCB) - - - - 12-20
12-19 Video Amp (Jack PCB) - - - - 12-21
12-20 VPS/PDC (Jack PCB) - - - - 12-22
12-21 Front Input (Jack PCB) - - - - 12-23
12-22 Connection (Jack PCB) - - - - 12-24
12-23 TM (Jack PCB) - - - - 12-25

Note

For schematic Diagram
- Resistors are in ohms, 1/8W unless otherwise noted.

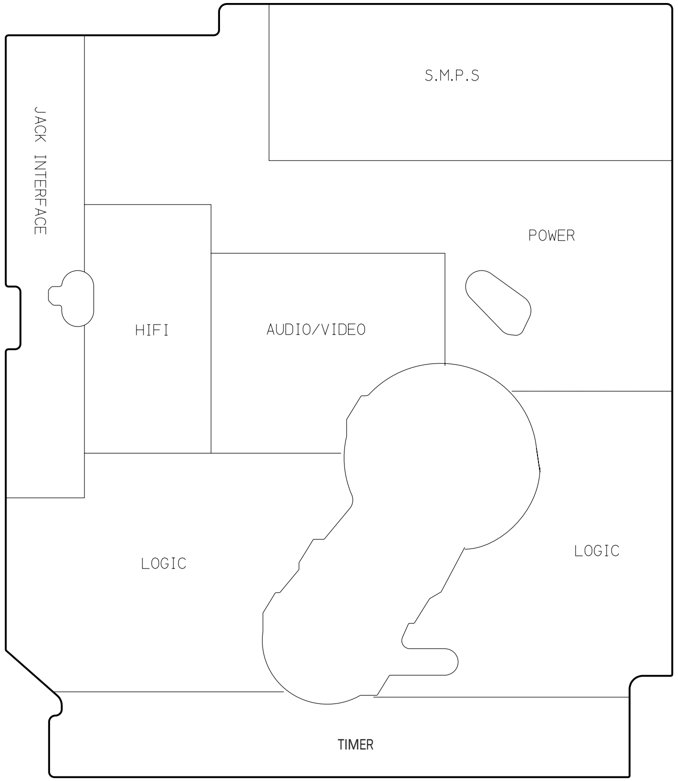
Special note :
Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

Note :
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

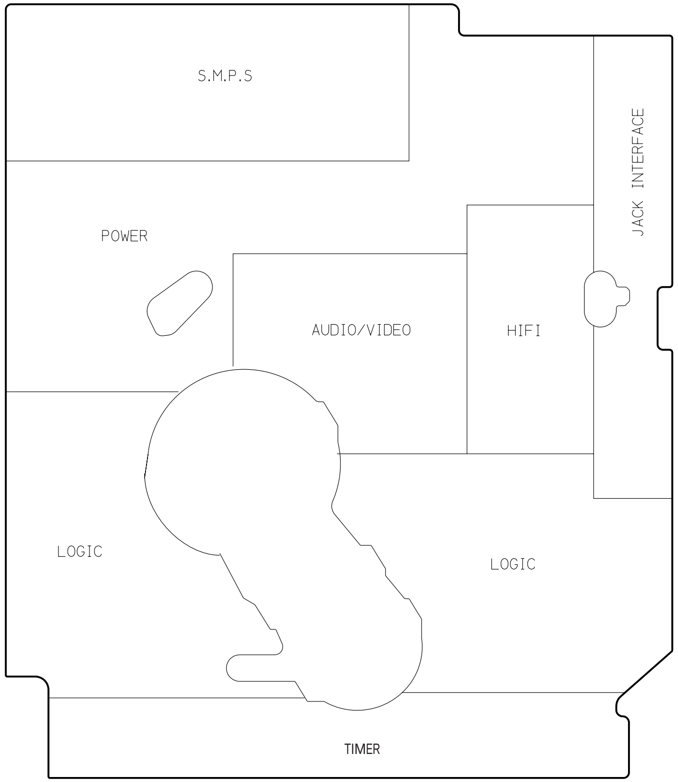
Important safety notices :
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components.
Use only the same type.

◆ Block Identification of Main PCB

VCR MAIN PCB

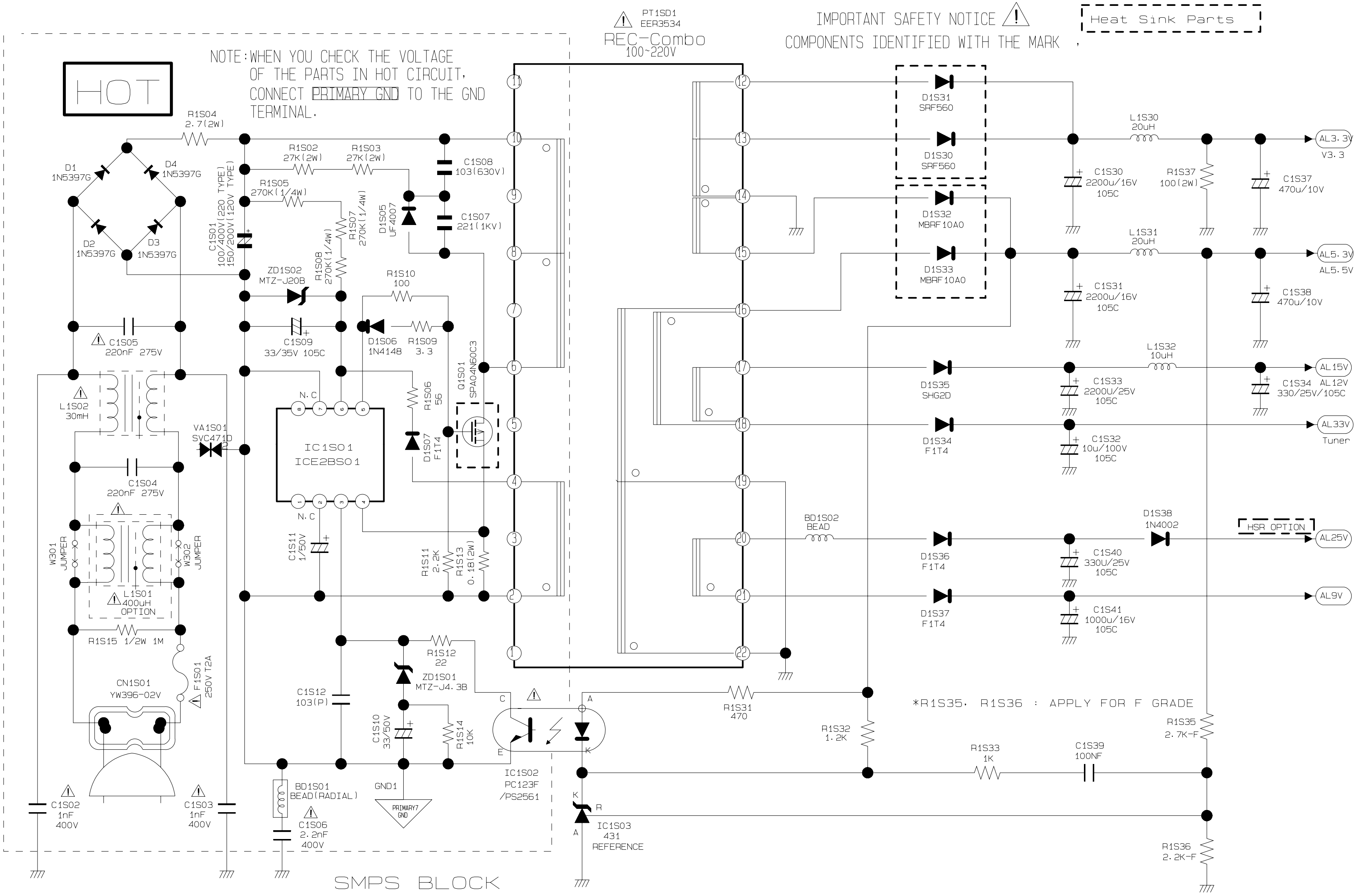

S.M.P.S
JACK INTERFACE
POWER
HIFI
AUDIO/VIDEO
LOGIC
LOGIC
TIMER

<Component Side>

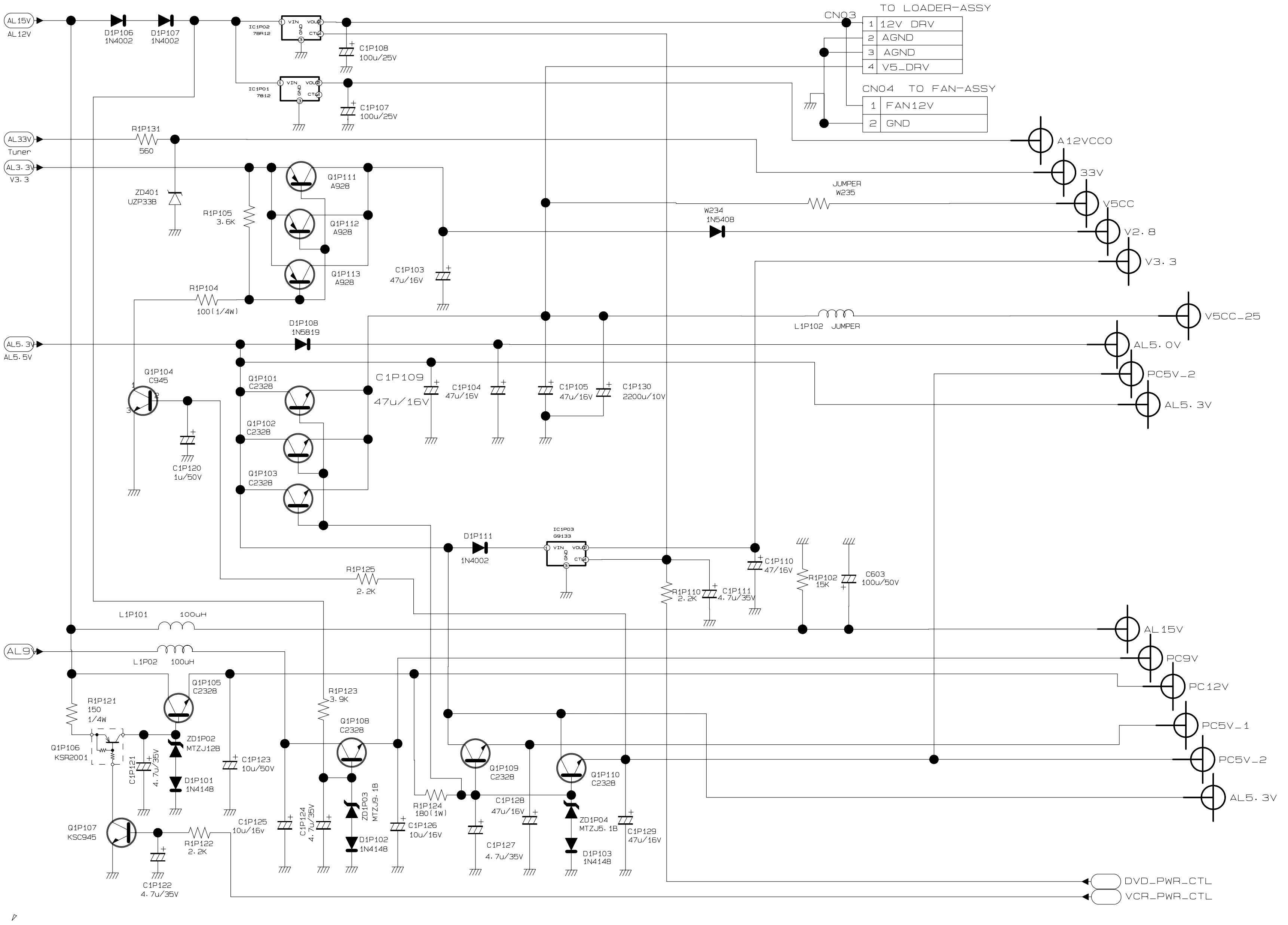

S.M.P.S
JACK INTERFACE
POWER
AUDIO/VIDEO
HIFI
LOGIC
LOGIC
TIMER

<Conductor Side>

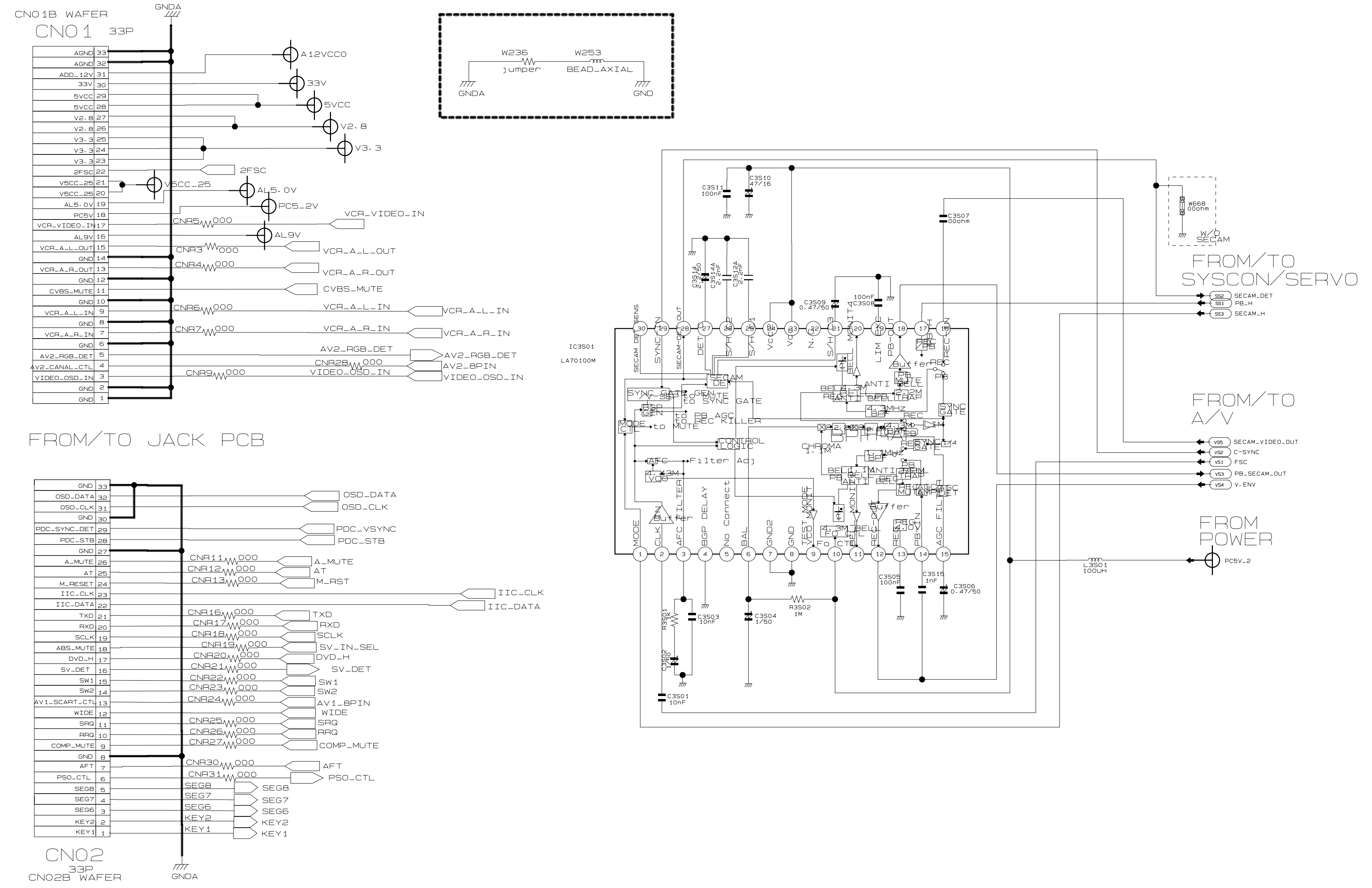
12-1 S.M.P.S (VCR Main PCB)


HOT
NOTE:WHEN YOU CHECK THE VOLTAGE
OF THE PARTS IN HOT CIRCUIT,
CONNECT PRIMARY GND TO THE GND
TERMINAL.
PT1SD1
EER3534
REC-Combo
100~220V
IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED WITH THE MARK ,
Heat Sink Parts
R1S04
2.7(2W)
D1
1N5397G
D4
1N5397G
D2
1N5397G
D3
1N5397G
C1S01
100/400V(220 TYPE)
150/200V(120V TYPE)
R1S02
27K(2W)
R1S03
27K(2W)
R1S05
270K(1/4W)
C1S08
103(630V)
C1S07
221(1KV)
D1S05
UF4007
R1S07
270K(1/4W)
R1S08
270K(1/4W)
ZD1S02
MTZ-J20B
R1S10
100
C1S05
220nF 275V
C1S09
33/35V 105C
D1S06
1N4148
R1S09
3.3
Q1S01
SPA04N60C3
L1S02
30mH
VA1S01
SVC471D
N.C
IC1S01
ICE2BS01
R1S06
56
D1S07
F1T4
C1S04
220nF 275V
W301
JUMPER
W302
JUMPER
L1S01
400uH
OPTION
C1S11
1/50V
R1S11
2.2K
R1S13
0.18(2W)
R1S15 1/2W 1M
F1S01
250V T2A
CN1S01
YW396-02V
R1S12
22
ZD1S01
MTZ-J4.3B
C1S12
103(P)
C1S10
33/50V
R1S14
10K
IC1S02
PC123F
/PS2561
C
E
A
K
C1S02
1nF
400V
C1S03
1nF
400V
BD1S01
BEAD(RADIAL)
GND1
PRIMARY GND
C1S06
2.2nF
400V
SMPS BLOCK
K
R
A
IC1S03
431
REFERENCE
R1S31
470
R1S32
1.2K
R1S33
1K
C1S39
100NF
*R1S35, R1S36 : APPLY FOR F GRADE
R1S35
2.7K-F
R1S36
2.2K-F
D1S31
SRF560
D1S30
SRF560
D1S32
MBRF10A0
D1S33
MBRF10A0
L1S30
20uH
C1S30
2200u/16V
105C
R1S37
100(2W)
C1S37
470u/10V
AL3.3V
V3.3
L1S31
20uH
C1S31
2200u/16V
105C
C1S38
470u/10V
AL5.5V
AL5.5V
L1S32
10uH
D1S35
SHG2D
C1S33
2200U/25V
105C
C1S34 AL12V
330/25V/105C
AL15V
D1S34
F1T4
C1S32
10u/100V
105C
AL33V
Tuner
BD1S02
BEAD
D1S38
1N4002
HSR OPTION
D1S36
F1T4
C1S40
330U/25V
105C
AL25V
D1S37
F1T4
C1S41
1000u/16V
105C
AL9V
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

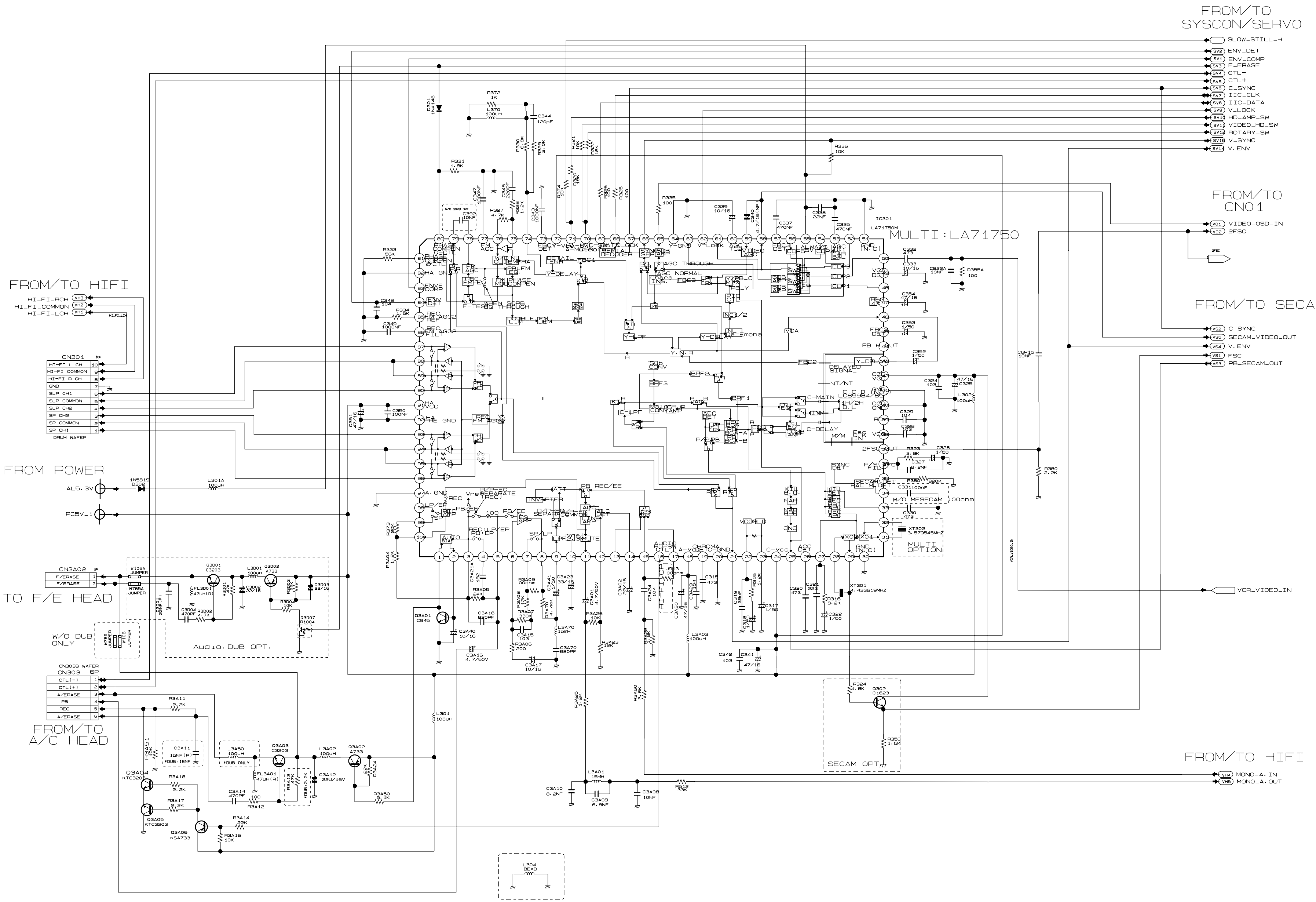
12-2 Power (VCR Main PCB)


AL15V
AL12V
D1P106
1N4002
D1P107
1N4002
IC1P02
78R12
VIN
VOUT
GND
CTL
C1P108
100u/25V
IC1P01
7812
C1P107
100u/25V
CN03
TO LOADER-ASSY
1 12V DRV
2 AGND
3 AGND
4 V5_DRV
CN04 TO FAN-ASSY
1 FAN12V
2 GND
A12VCC0
AL33V
Tuner
R1P131
560
AL3.3V
V3.3
Q1P111
A928
33V
ZD401
UZP33B
R1P105
3.6K
Q1P112
A928
JUMPER
W235
V5CC
W234
1N5408
V2.8
Q1P113
A928
C1P103
47u/16V
V3.3
R1P104
100(1/4W)
L1P102 JUMPER
V5CC_25
D1P108
1N5819
AL5.3V
AL5.5V
AL5.0V
Q1P104
C945
PC5V_2
Q1P101
C2328
C1P109
47u/16V
C1P104
47u/16V
C1P105
47u/16V
C1P130
2200u/10V
AL5.3V
Q1P102
C2328
C1P120
1u/50V
Q1P103
C2328
D1P111
1N4002
IC1P03
G9133
C1P110
47/16V
R1P125
2.2K
R1P110
2.2K
C1P111
4.7u/35V
R1P102
15K
C603
100u/50V
L1P101
100uH
AL15V
AL9V
L1P02
100uH
PC9V
Q1P105
C2328
PC12V
R1P121
150
1/4W
R1P123
3.9K
Q1P108
C2328
PC5V_1
ZD1P02
MTZJ12B
Q1P106
KSR2001
C1P121
4.7u/35V
C1P123
10u/50V
Q1P109
C2328
Q1P110
C2328
PC5V_2
D1P101
1N4148
ZD1P03
MTZJ9.1B
R1P124
180(1W)
C1P128
47u/16V
ZD1P04
MTZJ5.1B
AL5.3V
Q1P107
KSC945
C1P125
10u/16V
C1P124
4.7u/35V
C1P126
10u/16V
C1P129
47u/16V
R1P122
2.2K
D1P102
1N4148
C1P127
4.7u/35V
D1P103
1N4148
C1P122
4.7u/35V
DVD_PWR_CTL
VCR_PWR_CTL

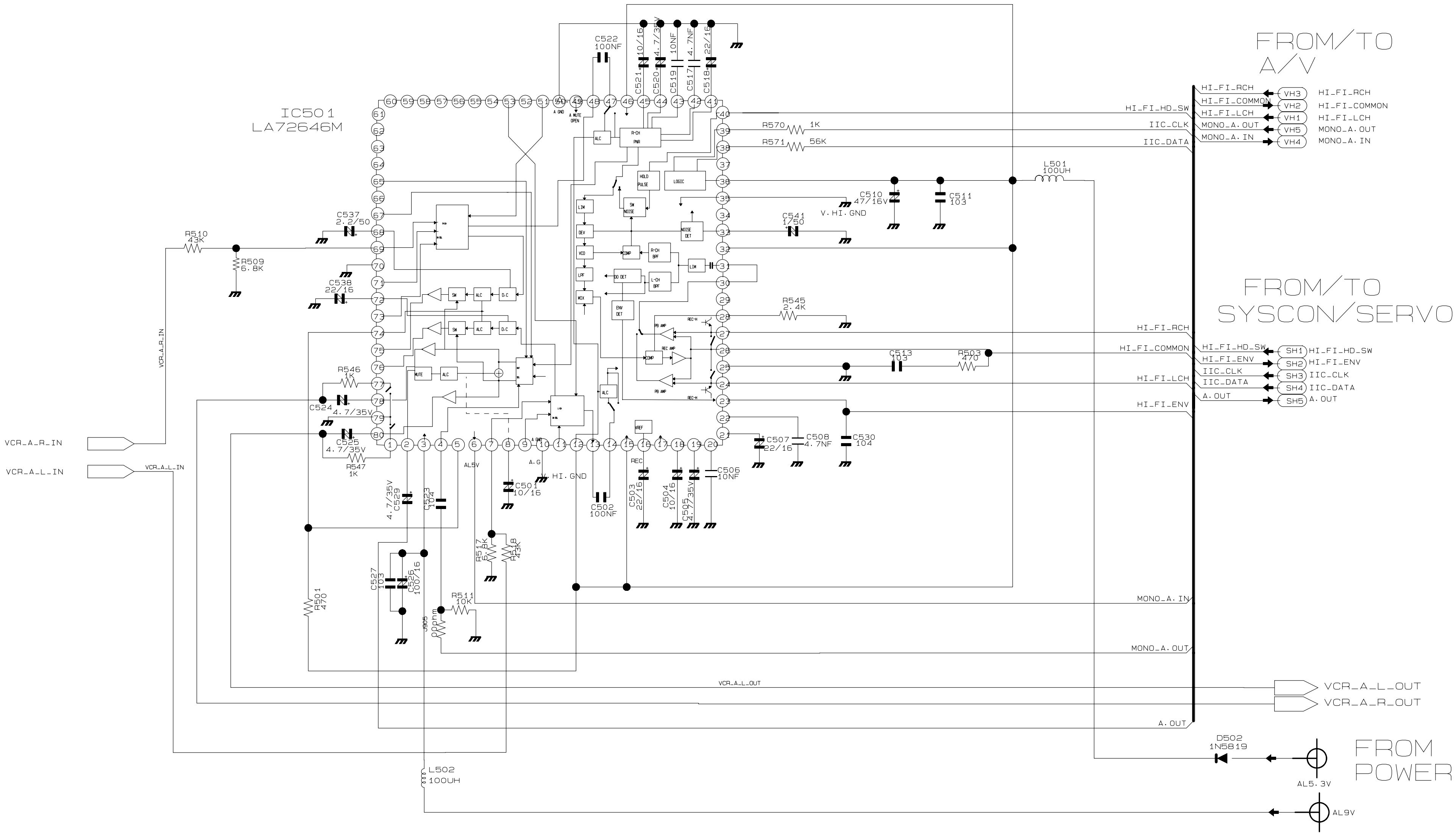
12-3 Secam (VCR Main PCB)


CN01B WAFER
CN01
33P
GNDA
AGND 33
AGND 32
ADD_12V 31
33V 30
5VCC 29
5VCC 28
V2.8 27
V2.8 26
V3.3 25
V3.3 24
V3.3 23
2FSC 22
V5CC_25 21
V5CC_25 20
AL5.0V 19
PC5V 18
VCR_VIDEO_IN 17
AL9V 16
VCR_A_L_OUT 15
GND 14
VCR_A_R_OUT 13
GND 12
CVBS_MUTE 11
GND 10
VCR_A_L_IN 9
GND 8
VCR_A_R_IN 7
GND 6
AV2_RGB_DET 5
AV2_CANAL_CTL 4
VIDEO_OSD_IN 3
GND 2
GND 1
A12VCC0
33V
5VCC
V2.8
V3.3
2FSC
V5CC_25
AL5.0V
PC5_2V
CNR5 000
VCR_VIDEO_IN
AL9V
CNR3 000
VCR_A_L_OUT
CNR4 000
VCR_A_R_OUT
CVBS_MUTE
CNR6 000
VCR_A_L_IN
CNR7 000
VCR_A_R_IN
AV2_RGB_DET
CNR28 000
AV2_8PIN
CNR9 000
VIDEO_OSD_IN
FROM/TO JACK PCB
W236
jumper
W253
BEAD_AXIAL
GNDA
GND
IC3S01
LA70100M
C3S11 100nF
C3S10 47/16
C3S07 00ohm
C3S14 2.2/50
C3S14A 2.2nF
C3S12A 2.2nF
C3S09 0.47/50
100nF C3S08
W668 00ohm
W/O SECAM
FROM/TO SYSCON/SERVO
SS2 SECAM_DET
SS1 PB_H
SS3 SECAM_H
30 SECAM DET SENS
29 SYNC IN
28 SECAM-DET OUT
27 DET
26 S/H2
25 S/H1
24 Vcc
23 Vq
22 N.C
21 S/H3
20 MONIT
19 LIM
18 PB-OUT
17 PB-H
16 REC-IN
SECAM DET
SYNC GATE
BGP GEN
MODE CTL
to MUTE
SYNC GATE
PB AGC
REC KILLER
CONTROL LOGIC
AFC
Filter Adj
VCO
4.43M
CHROMA 1.1M
BELL 4.3M
ANTI BELL
4.3MHz BPF
BELL TRAP
REC
SYNC GATE
Buffer
PB MUTE
1.1MHz BPF
BELL ANTI BELL
Buffer
4.3M
Fo CTL
Buffer
FROM/TO A/V
VS5 SECAM_VIDEO_OUT
VS2 C-SYNC
VS1 FSC
VS3 PB_SECAM_OUT
VS4 V.ENV
FROM POWER
PC5V_2
L3S01 100UH
1 MODE
2 CLK
3 AFC FILTER
4 BGP DELAY
5 No Connect
6 BAL
7 GND2
8 GND
9 TEST MODE VCO MONIT
10
11 MONI
12 REC-OUT
13 REC IN
14 PB IN
15 AGC FILTER
C3S05 100nF
C3S15 1nF
C3S06 0.47/50
R3S01 1K
C3S03 10nF
C3S04 1/50
R3S02 1M
C3S02 1/50
C3S01 10nF
GND 33
OSD_DATA 32
OSD_CLK 31
GND 30
PDC_SYNC_DET 29
PDC_STB 28
GND 27
A_MUTE 26
AT 25
M_RESET 24
IIC_CLK 23
IIC_DATA 22
TXD 21
RXD 20
SCLK 19
ABS_MUTE 18
DVD_H 17
SV_DET 16
SW1 15
SW2 14
AV1_SCART_CTL 13
WIDE 12
SRQ 11
RRQ 10
COMP_MUTE 9
GND 8
AFT 7
PSO_CTL 6
SEG8 5
SEG7 4
SEG6 3
KEY2 2
KEY1 1
OSD_DATA
OSD_CLK
PDC_VSYNC
PDC_STB
CNR11 000
A_MUTE
CNR12 000
AT
CNR13 000
M_RST
IIC_CLK
IIC_DATA
CNR16 000
TXD
CNR17 000
RXD
CNR18 000
SCLK
CNR19 000
SV_IN_SEL
CNR20 000
DVD_H
CNR21 000
SV_DET
CNR22 000
SW1
CNR23 000
SW2
CNR24 000
AV1_8PIN
WIDE
CNR25 000
SRQ
CNR26 000
RRQ
CNR27 000
COMP_MUTE
CNR30 000
AFT
CNR31 000
PSO_CTL
SEG8
SEG7
SEG6
KEY2
KEY1
CN02
33P
CN02B WAFER
GNDA

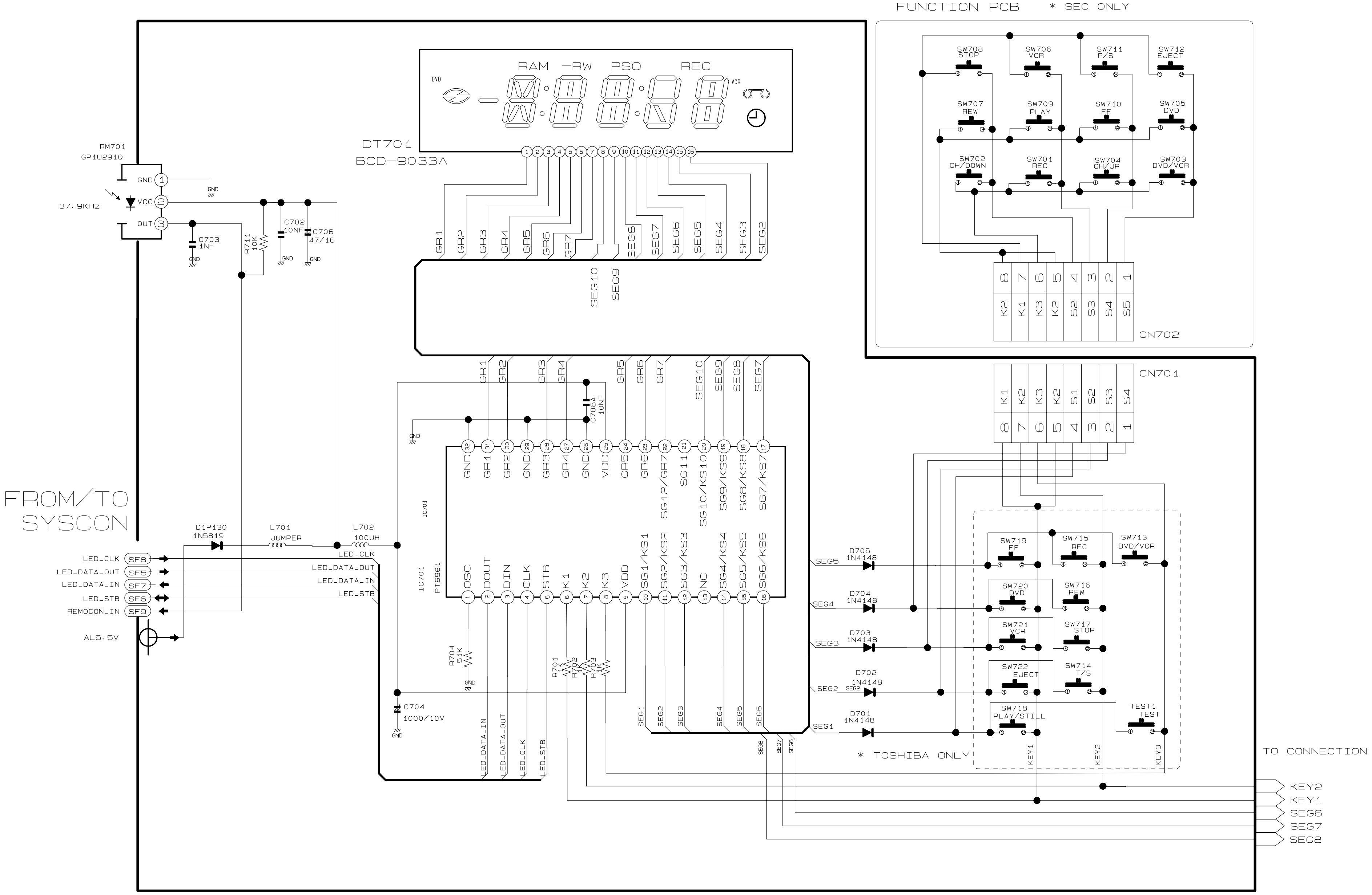
12-4 A/V (VCR Main PCB)


FROM/TO SYSCON/SERVO
SLOW_STILL_H
ENV_DET
ENV_COMP
F_ERASE
CTL-
CTL+
C_SYNC
IIC_CLK
IIC_DATA
V_LOCK
HD_AMP_SW
VIDEO_HD_SW
ROTARY_SW
V_SYNC
V.ENV
FROM/TO CN01
VIDEO_OSD_IN
2FSC
FROM/TO SECAM
C_SYNC
SECAM_VIDEO_OUT
V.ENV
FSC
PB_SECAM_OUT
MULTI:LA71750
IC301
LA71750M
FROM/TO HIFI
HI_FI_RCH
HI_FI_COMMON
HI_FI_LCH
CN301
HI-FI L CH
HI-FI COMMON
HI-FI R CH
GND
SLP CH1
SLP COMMON
SLP CH2
SP CH2
SP COMMON
SP CH1
DRUM WAFER
FROM POWER
AL5.3V
PC5V_1
CN3A02
F/ERASE
F/ERASE
TO F/E HEAD
W/O DUB ONLY
Audio.DUB OPT.
CN303B WAFER
CN303 6P
CTL(-)
CTL(+)
A/ERASE
PB
REC
A/ERASE
FROM/TO A/C HEAD
SECAM OPT
MULTI OPTION
VCR_VIDEO_IN
FROM/TO HIFI
MONO_A.IN
MONO_A.OUT
L304 BEAD

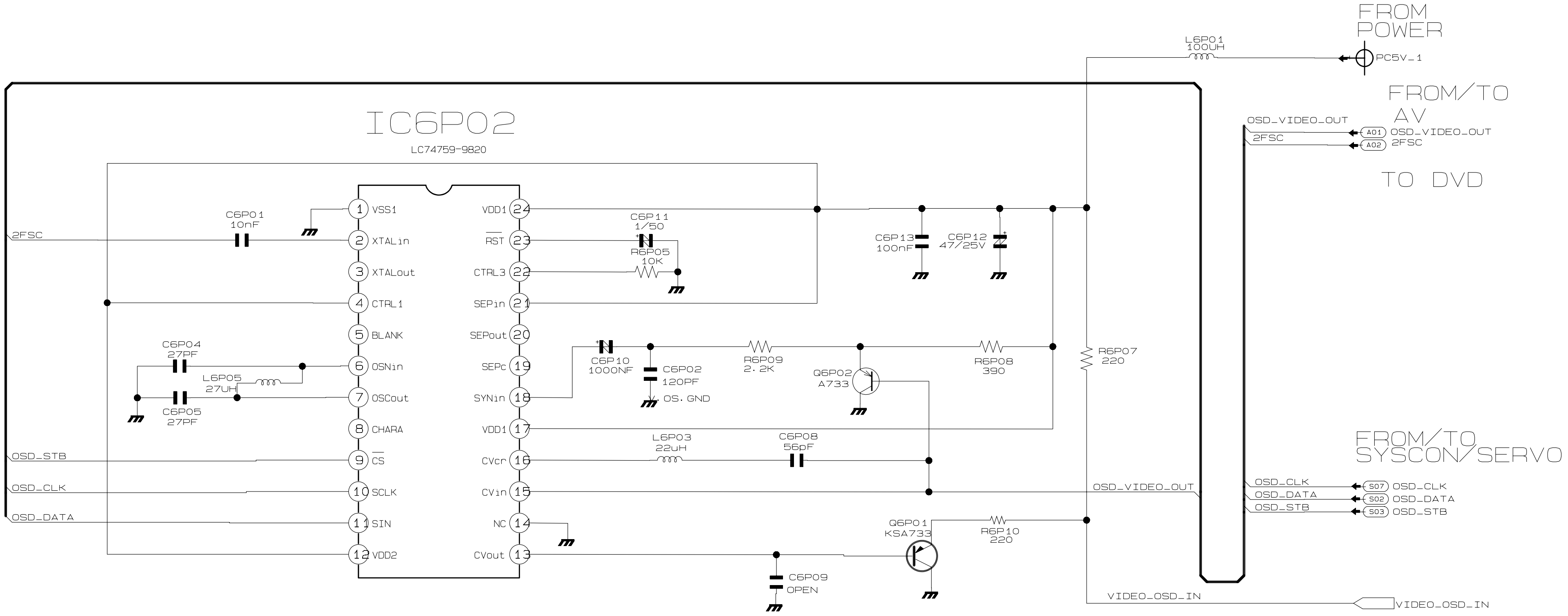
12-5 Hi-Fi (VCR Main PCB)


IC501
LA72646M
FROM/TO
A/V
HI_FI_RCH
HI_FI_COMMON
HI_FI_LCH
MONO_A.OUT
MONO_A.IN
VH3
VH2
VH1
VH5
VH4
HI_FI_HD_SW
IIC_CLK
IIC_DATA
R570
1K
R571
56K
L501
100UH
C510
47/16V
C511
103
C541
1/50
V.HI.GND
C522
100NF
C521 10/16
C520 4.7/35V
C519 10NF
C517 4.7NF
C518 22/16
C537
2.2/50
R510
43K
R509
6.8K
C538
22/16
R546
1K
C524
4.7/35V
C525
4.7/35V
R547
1K
R545
2.4K
C513
103
R503
470
FROM/TO
SYSCON/SERVO
HI_FI_RCH
HI_FI_COMMON
HI_FI_LCH
HI_FI_ENV
HI_FI_HD_SW
IIC_CLK
IIC_DATA
A.OUT
SH1
SH2
SH3
SH4
SH5
C507
22/16
C508
4.7NF
C530
104
VCR_A_R_IN
VCR_A_L_IN
VCR_A_R_IN
VCR_A_L_IN
C529
4.7/35V
C523
104
AL5V
C501
10/16
A.G
HI.GND
C502
100NF
REC
C503
22/16
C504
10/16
C505
4.7/35V
C506
10NF
R517
6.8K
R518
43K
C527
103
C526
100/16
R501
470
R511
10K
J905
0Ohm
MONO_A.IN
MONO_A.OUT
VCR_A_L_OUT
VCR_A_L_OUT
VCR_A_R_OUT
A.OUT
D502
1N5819
FROM
POWER
AL5.3V
AL9V
L502
100UH
ALC
R-CH
PNR
HOLD
PULSE
LOGIC
LIM
SW
NOISE
DEV
NOISE
DET
VCO
COMP
R-CH
BPF
LPF
DO DET
L-CH
BPF
LIM
MIX
ENV
DET
PB AMP
REC AMP
COMP
REC-H
SW
ALC
D-C
MUTE
VREF
A GND
A MUTE
OPEN

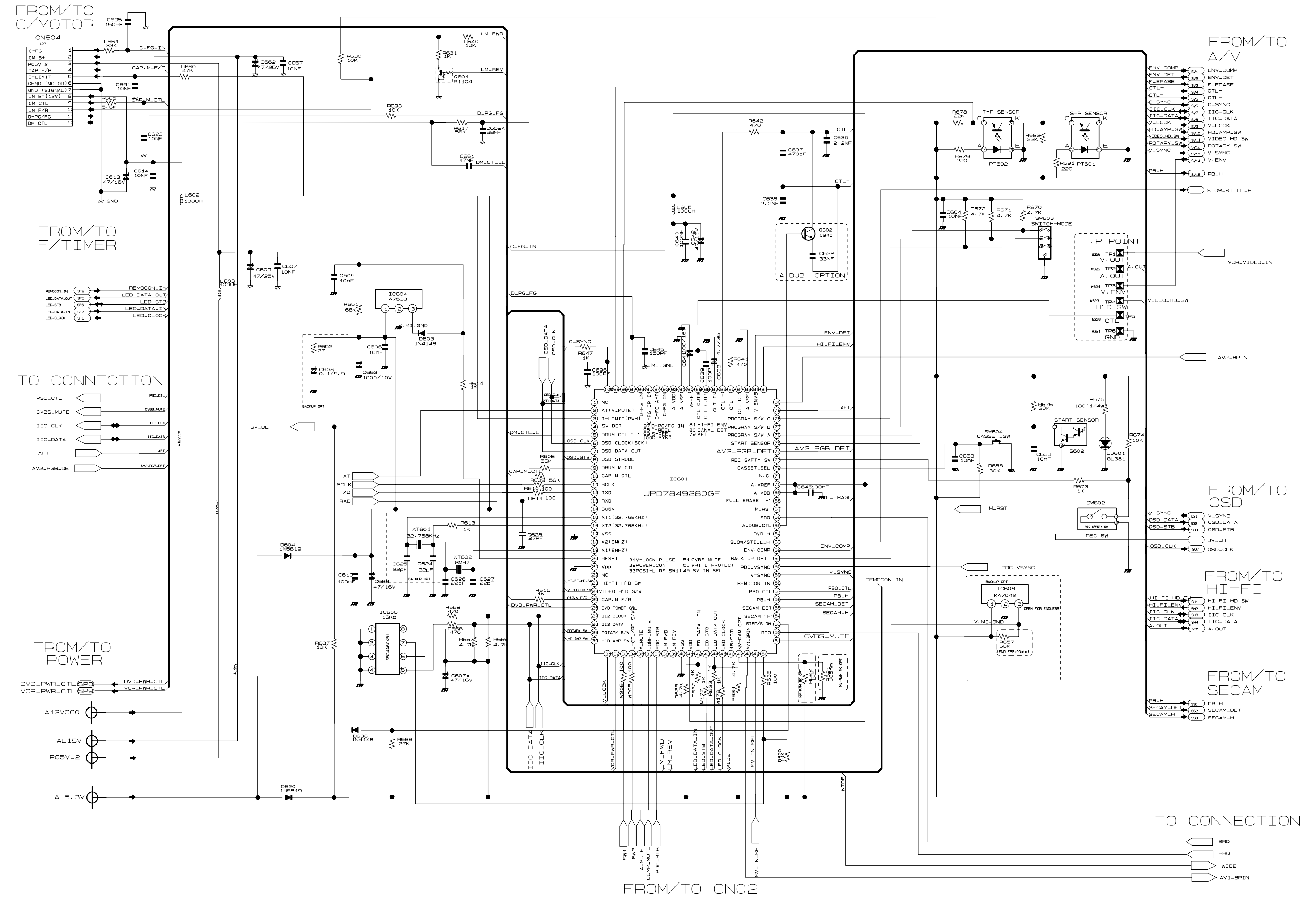
12-6 E-Timer (VCR Main PCB)


FUNCTION PCB
* SEC ONLY
SW708 STOP
SW706 VCR
SW711 P/S
SW712 EJECT
SW707 REW
SW709 PLAY
SW710 FF
SW705 DVD
SW702 CH/DOWN
SW701 REC
SW704 CH/UP
SW703 DVD/VCR
CN702
K2 K1 K3 K2 S2 S3 S4 S5
CN701
K1 K2 K3 K2 S1 S2 S3 S4
RAM -RW PSO REC
DVD
VCR
DT701
BCD-9033A
RM701
GP1U291Q
GND
VCC
OUT
37.9KHz
C703 1NF
R711 10K
C702 10NF
C706 47/16
GR1 GR2 GR3 GR4 GR5 GR6 GR7 SEG8 SEG7 SEG6 SEG5 SEG4 SEG3 SEG2
SEG10 SEG9
C708A 10NF
IC701
PT6961
GND GR1 GR2 GND GR3 GR4 GND VDD GR5 GR6 SG12/GR7 SG11 SG10/KS10 SG9/KS9 SG8/KS8 SG7/KS7
OSC DOUT DIN CLK STB K1 K2 K3 VDD SG1/KS1 SG2/KS2 SG3/KS3 NC SG4/KS4 SG5/KS5 SG6/KS6
FROM/TO SYSCON
D1P130 1N5819
L701 JUMPER
L702 100UH
LED_CLK SF8
LED_DATA_OUT SF5
LED_DATA_IN SF7
LED_STB SF6
REMOCON_IN SF9
AL5.5V
R704 51K
R701 1K
R702 1K
R703 1K
C704 1000/10V
LED_DATA_IN LED_DATA_OUT LED_CLK LED_STB
SEG1 SEG2 SEG3 SEG4 SEG5 SEG6
D705 1N4148
D704 1N4148
D703 1N4148
D702 1N4148
D701 1N4148
SW719 FF
SW715 REC
SW713 DVD/VCR
SW720 DVD
SW716 REW
SW721 VCR
SW717 STOP
SW722 EJECT
SW714 T/S
SW718 PLAY/STILL
TEST1 TEST
* TOSHIBA ONLY
KEY1 KEY2 KEY3
TO CONNECTION
KEY2
KEY1
SEG6
SEG7
SEG8

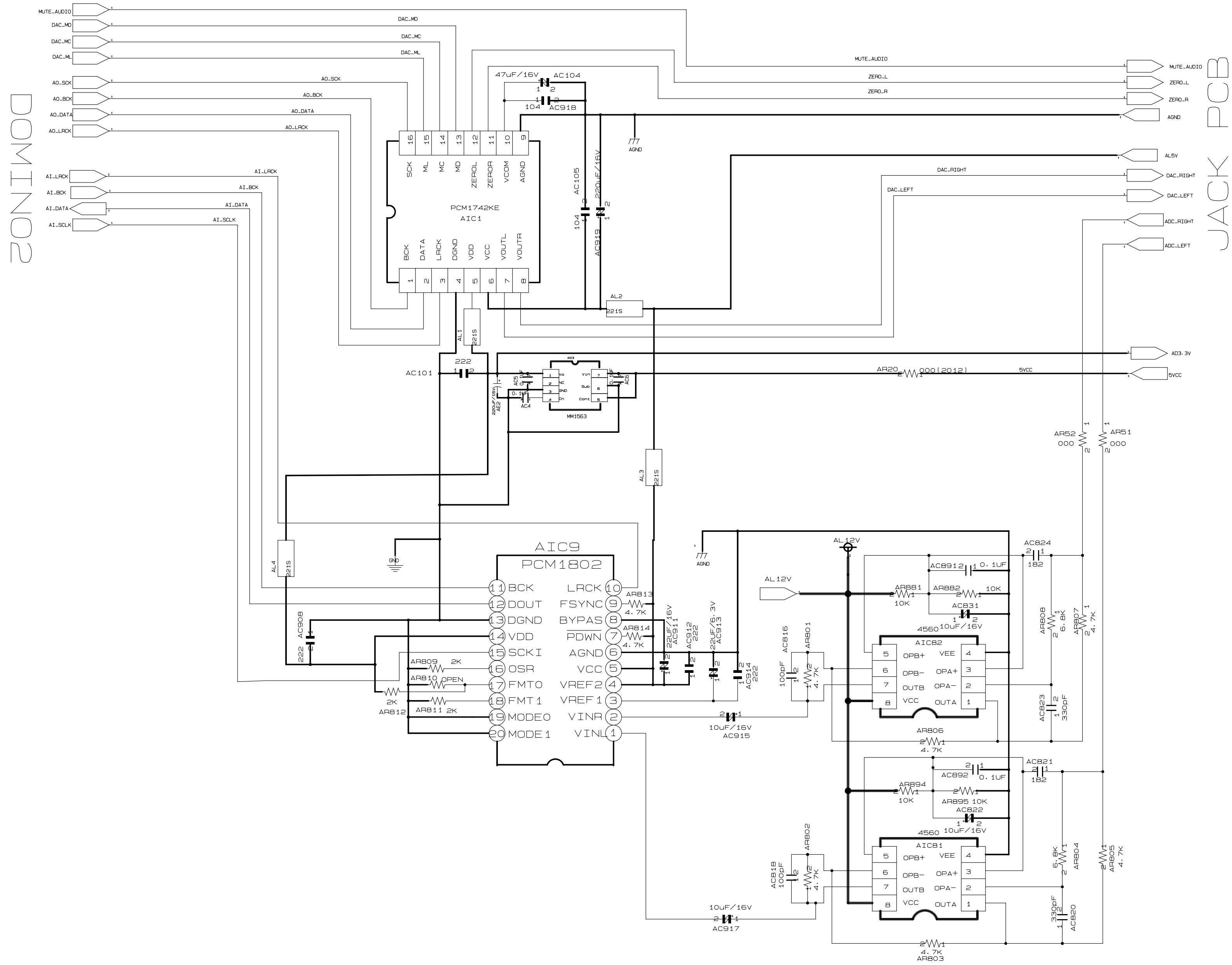
12-7 OSD (VCR Main PCB)


FROM
POWER
L6P01
100UH
PC5V_1
FROM/TO
AV
OSD_VIDEO_OUT
2FSC
A01
A02
OSD_VIDEO_OUT
2FSC
TO DVD
IC6P02
LC74759-9820
C6P01
10nF
2FSC
1 VSS1
2 XTALin
3 XTALout
4 CTRL1
5 BLANK
6 OSNin
7 OSCout
8 CHARA
9 CS
10 SCLK
11 SIN
12 VDD2
VDD1 24
RST 23
CTRL3 22
SEPin 21
SEPout 20
SEPc 19
SYNin 18
VDD1 17
CVcr 16
CVin 15
NC 14
CVout 13
C6P11
1/50
R6P05
10K
C6P13
100nF
C6P12
47/25V
C6P04
27PF
L6P05
27UH
C6P05
27PF
C6P10
1000NF
C6P02
120PF
OS. GND
R6P09
2.2K
Q6P02
A733
R6P08
390
R6P07
220
L6P03
22uH
C6P08
56pF
OSD_STB
OSD_CLK
OSD_DATA
OSD_VIDEO_OUT
Q6P01
KSA733
R6P10
220
C6P09
OPEN
FROM/TO
SYSCON/SERVO
OSD_CLK
OSD_DATA
OSD_STB
S07
S02
S03
OSD_CLK
OSD_DATA
OSD_STB
VIDEO_OSD_IN
VIDEO_OSD_IN

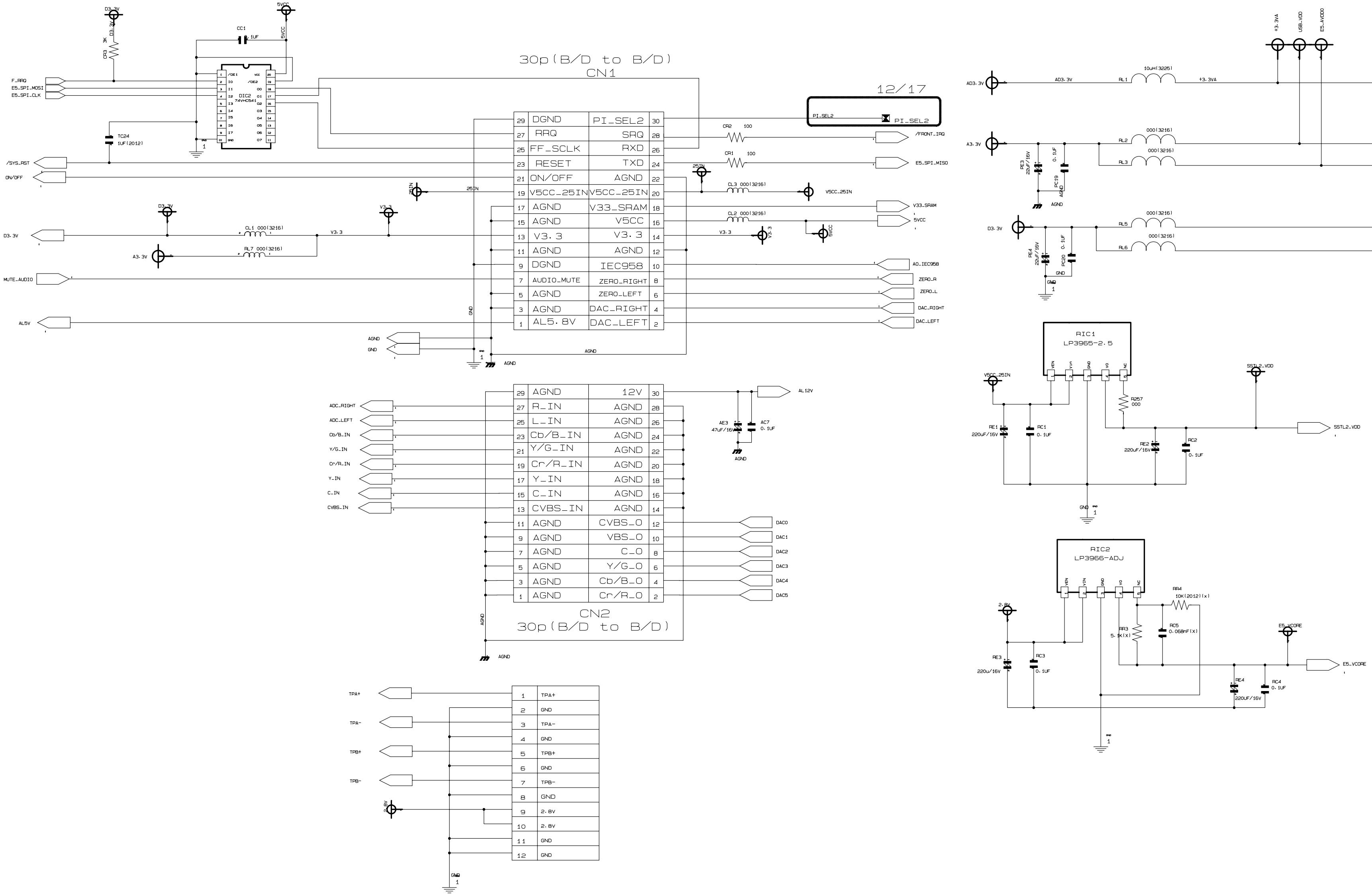
12-8 System Control / Servo (VCR Main PCB)


FROM/TO C/MOTOR
CN604
C-FG
CM B+
PC5V-2
CAP F/R
I-LIMIT
GFND (MOTOR)
GND (SIGNAL)
LM B+(12V)
CM CTL
LM F/R
D-PG/FG
DM CTL
FROM/TO F/TIMER
REMOCON_IN
LED_DATA_OUT
LED_STB
LED_DATA_IN
LED_CLOCK
TO CONNECTION
PSO_CTL
CVBS_MUTE
IIC_CLK
IIC_DATA
AFT
AV2_RGB_DET
FROM/TO POWER
DVD_PWR_CTL
VCR_PWR_CTL
A12VCC0
AL15V
PC5V_2
AL5.3V
SV_DET
IC604 A7533
IC605 16Kb
XT601 32.768KHz
XT602 8MHz
IC601
UPD7849280GF
T-R SENSOR
S-R SENSOR
PT602
PT601
Q602 C945
A_DUB OPTION
SW603 SWITCH-MODE
T.P POINT
TP1 V.OUT
TP2 A.OUT
TP3 V.ENV
TP4 H'D SW
TP5 CTL
TP6 GND
VCR_VIDEO_IN
VIDEO_HD_SW
AV2_8PIN
START SENSOR
SW604 CASSET_SW
S602
LD601 GL381
SW602 REC SW
IC608 KA7042
PDC_VSYNC
M_RST
FROM/TO A/V
ENV_COMP
ENV_DET
F_ERASE
CTL-
CTL+
C_SYNC
IIC_CLK
IIC_DATA
V_LOCK
HD_AMP_SW
VIDEO_HD_SW
ROTARY_SW
V_SYNC
V.ENV
PB_H
SLOW_STILL_H
FROM/TO OSD
V_SYNC
OSD_DATA
OSD_STB
DVD_H
OSD_CLK
FROM/TO HI-FI
HI_FI_HD_SW
HI_FI_ENV
IIC_CLK
IIC_DATA
A.OUT
FROM/TO SECAM
PB_H
SECAM_DET
SECAM_H
TO CONNECTION
SRQ
RRQ
WIDE
AV1_8PIN
FROM/TO CN02
SW1
SW2
A_MUTE
COMP_MUTE
PDC_STB
SV_IN_SEL
IIC_DATA
IIC_CLK

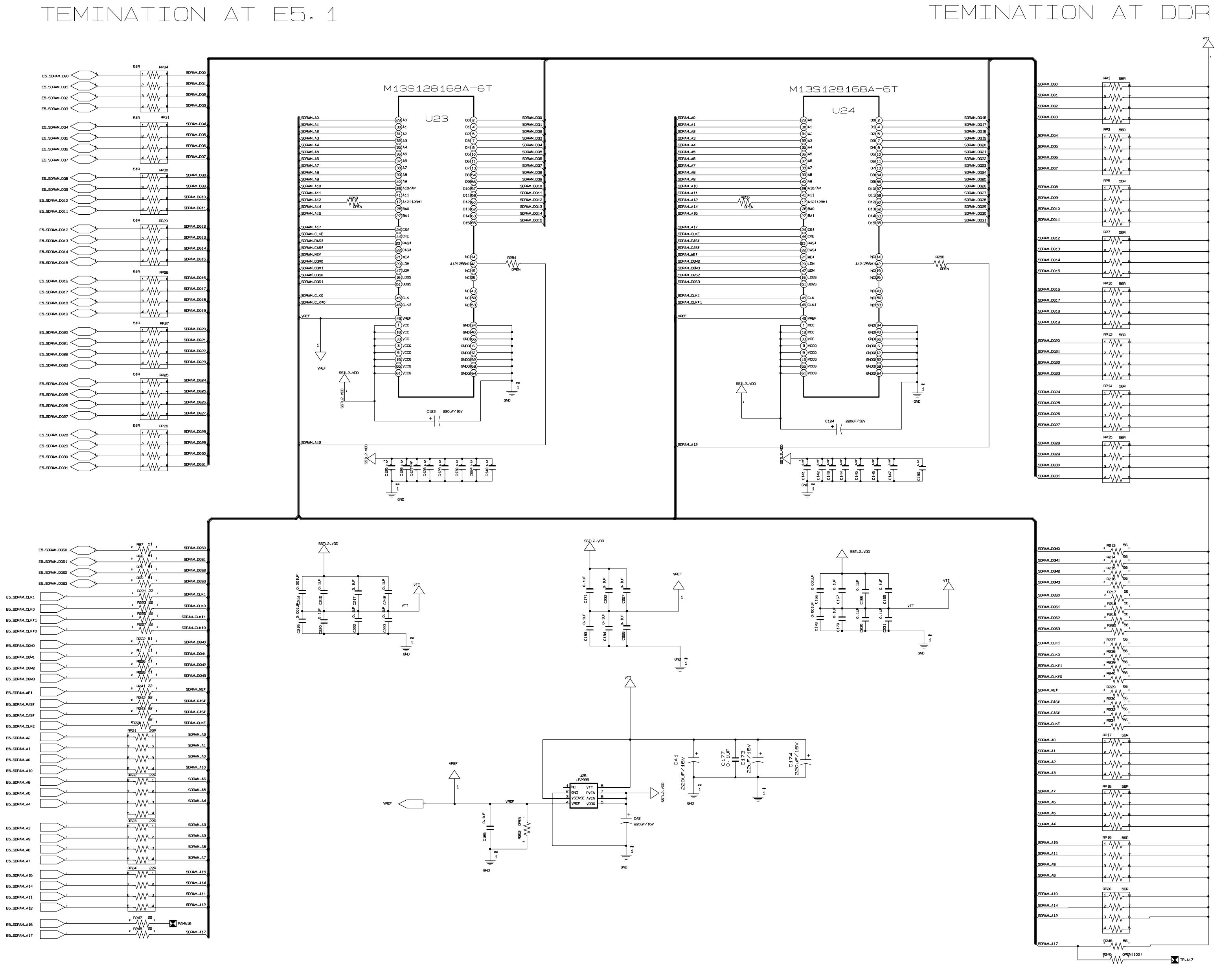
12-9 Audio In/Out (DVD Main PCB)


DOMINO2
JACK PCB
MUTE_AUDIO
DAC_MD
DAC_MC
DAC_ML
AO_SCK
AO_BCK
AO_DATA
AO_LRCK
AI_LRCK
AI_BCK
AI_DATA
AI_SCLK
ZERO_L
ZERO_R
AGND
AL5V
DAC_RIGHT
DAC_LEFT
ADC_RIGHT
ADC_LEFT
AD3.3V
5VCC
PCM1742KE
AIC1
SCK
ML
MC
MD
ZEROL
ZEROR
VCOM
AGND
BCK
DATA
LRCK
DGND
VDD
VCC
VOUTL
VOUTR
47uF/16V
AC104
104
AC918
AC105
104
220uF/16V
AC919
AL2
221S
AL1
221S
AC101
222
MM1563
AE2
220uF/16V
AC5
AC4
AC6
AR20
000(2012)
AR52
000
AR51
000
AL3
221S
AL4
221S
GND
AIC9
PCM1802
BCK
DOUT
DGND
VDD
SCKI
OSR
FMT0
FMT1
MODE0
MODE1
LRCK
FSYNC
BYPAS
PDWN
AGND
VCC
VREF2
VREF1
VINR
VINL
AC908
222
AR809
2K
AR810
OPEN
AR811
2K
AR812
2K
AR813
4.7K
AR814
4.7K
22uF/16V
AC911
AC912
222
22uF/6.3V
AC913
AC914
222
10uF/16V
AC915
10uF/16V
AC917
AL12V
AL12V
AGND
AR881
10K
AR882
10K
AC8912
0.1UF
AC831
10uF/16V
AC824
182
4560
AIC82
OPB+
OPB-
OUTB
VCC
VEE
OPA+
OPA-
OUTA
AR808
6.8K
AR807
4.7K
AC816
100pF
AR801
4.7K
AC823
330pF
AR806
4.7K
AC821
182
AC892
0.1UF
AR894
10K
AR895
10K
AC822
10uF/16V
4560
AIC81
AC818
100pF
AR802
4.7K
AR804
6.8K
AR805
4.7K
330pF
AC820
AR803
4.7K

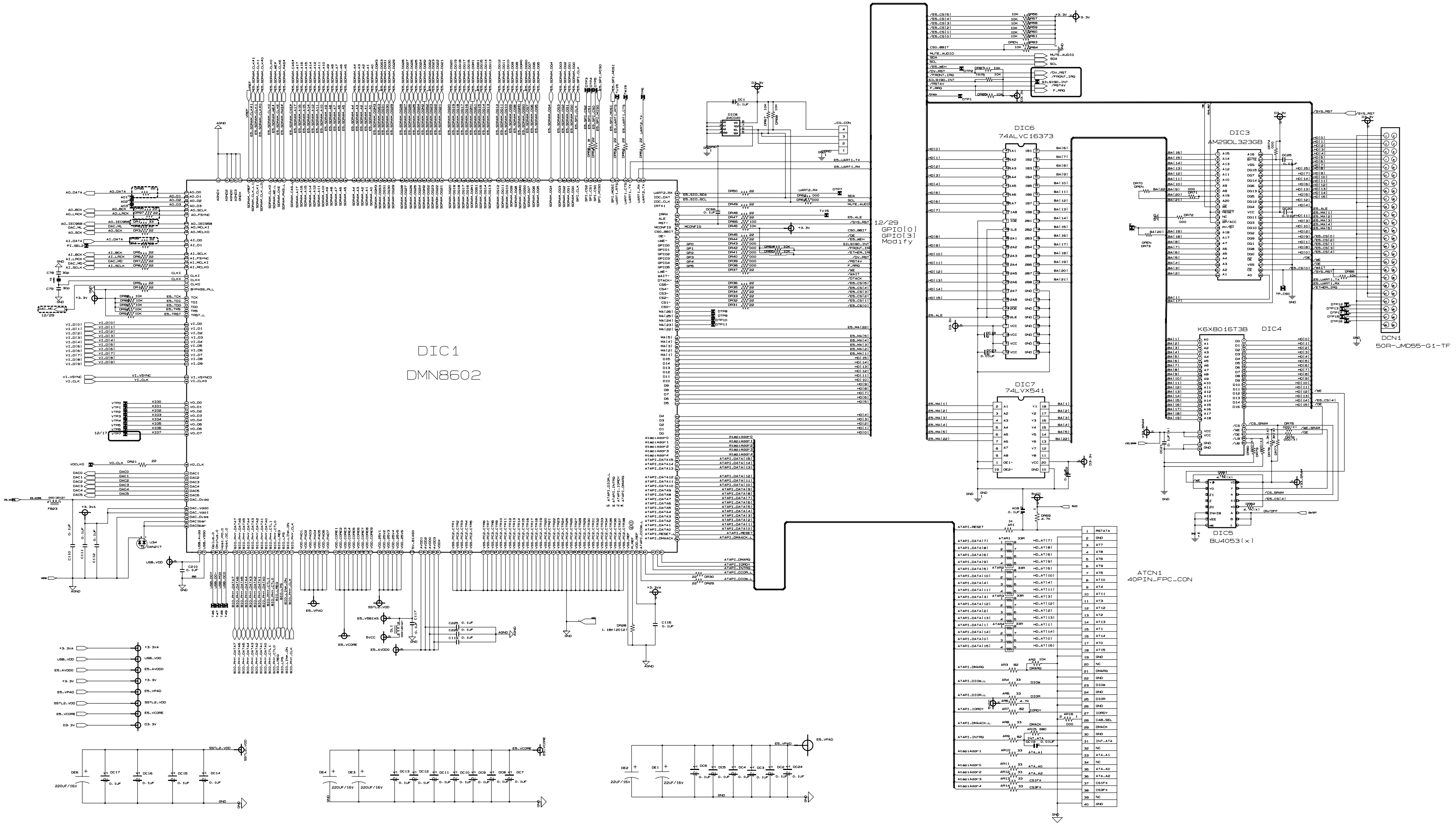
12-10 Connector (DVD Main PCB)


30p(B/D to B/D)
CN1
29 DGND PI_SEL2 30
27 RRQ SRQ 28
25 FF_SCLK RXD 26
23 RESET TXD 24
21 ON/OFF AGND 22
19 V5CC_25IN V5CC_25IN 20
17 AGND V33_SRAM 18
15 AGND V5CC 16
13 V3.3 V3.3 14
11 AGND AGND 12
9 DGND IEC958 10
7 AUDIO_MUTE ZERO_RIGHT 8
5 AGND ZERO_LEFT 6
3 AGND DAC_RIGHT 4
1 AL5.8V DAC_LEFT 2
12/17
PI_SEL2
F_RRQ
E5_SPI_MOSI
E5_SPI_CLK
/SYS_RST
ON/OFF
D3.3V
A3.3V
MUTE_AUDIO
AL5V
AGND
GND
DIC2
74VHC541
CC1
0.1UF
CR3
3K
TC24
1UF(2012)
5VCC
CL1 000(3216)
RL7 000(3216)
V3-3
25IN
CR2 100
CR1 100
CL3 000(3216)
CL2 000(3216)
/FRONT_IRQ
E5_SPI_MISO
V5CC_25IN
V33_SRAM
5VCC
AO_IEC958
ZERO_R
ZERO_L
DAC_RIGHT
DAC_LEFT
29 AGND 12V 30
27 R_IN AGND 28
25 L_IN AGND 26
23 Cb/B_IN AGND 24
21 Y/G_IN AGND 22
19 Cr/R_IN AGND 20
17 Y_IN AGND 18
15 C_IN AGND 16
13 CVBS_IN AGND 14
11 AGND CVBS_O 12
9 AGND VBS_O 10
7 AGND C_O 8
5 AGND Y/G_O 6
3 AGND Cb/B_O 4
1 AGND Cr/R_O 2
CN2
30p(B/D to B/D)
ADC_RIGHT
ADC_LEFT
Cb/B_IN
Y/G_IN
Cr/R_IN
Y_IN
C_IN
CVBS_IN
AL12V
AE3
47uF/16V
AC7
0.1UF
DAC0
DAC1
DAC2
DAC3
DAC4
DAC5
TPA+
TPA-
TPB+
TPB-
1 TPA+
2 GND
3 TPA-
4 GND
5 TPB+
6 GND
7 TPB-
8 GND
9 2.8V
10 2.8V
11 GND
12 GND
+3.3VA
USB_VDD
E5_AVDD0
+3.3V
E5_VPAD
AD3.3V
RL1 10uH(3225)
RL2 000(3216)
RL3 000(3216)
RL5 000(3216)
RL6 000(3216)
PE3 22uF/16V
PC19 0.1UF
PE4 22uF/16V
PC20 0.1UF
RIC1
LP3965-2.5
V5CC_25IN
RE1 220uF/16V
RC1 0.1UF
R257 000
RE2 220uF/16V
RC2 0.1UF
SSTL2_VDD
RIC2
LP3966-ADJ
2.8V
RE3 220u/16V
RC3 0.1UF
RR4 10K(2012)(x)
RR3 5.1K(X)
RC5 0.068nF(X)
E5_VCORE
RE4 220UF/16V
RC4 0.1UF

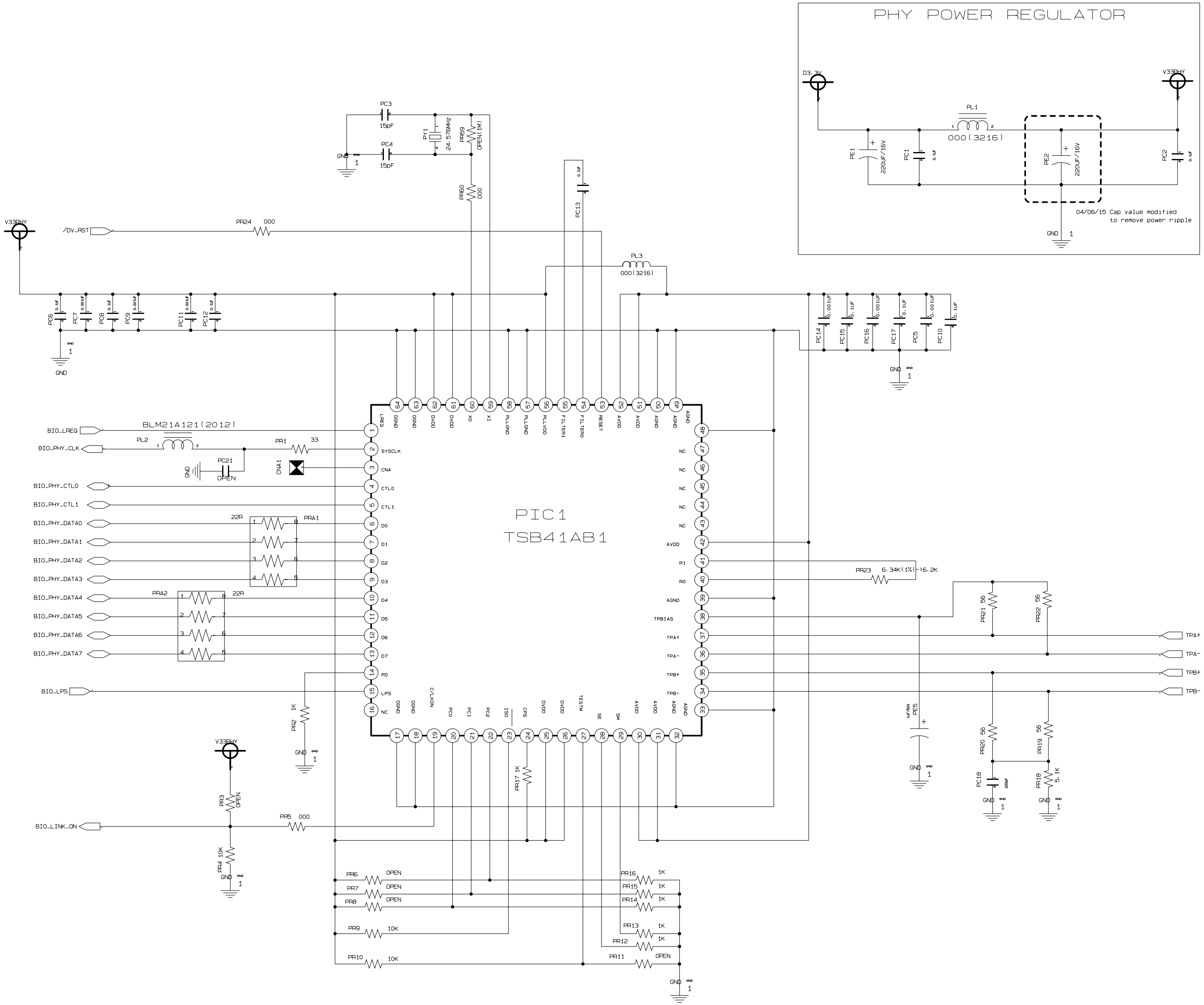
12-11 DDR (DVD Main PCB)


TEMINATION AT E5.1
TEMINATION AT DDR
M13S128168A-6T
U23
M13S128168A-6T
U24
VTT
VREF
SSTL2_VDD
GND
C123 220uF/16V
C124 220uF/16V
U26
LP2995
CA1 220uF/16V
C177 0.1uF
C173 22uF/16V
C174 220uF/16V
CA2 220uF/16V
TP_A17

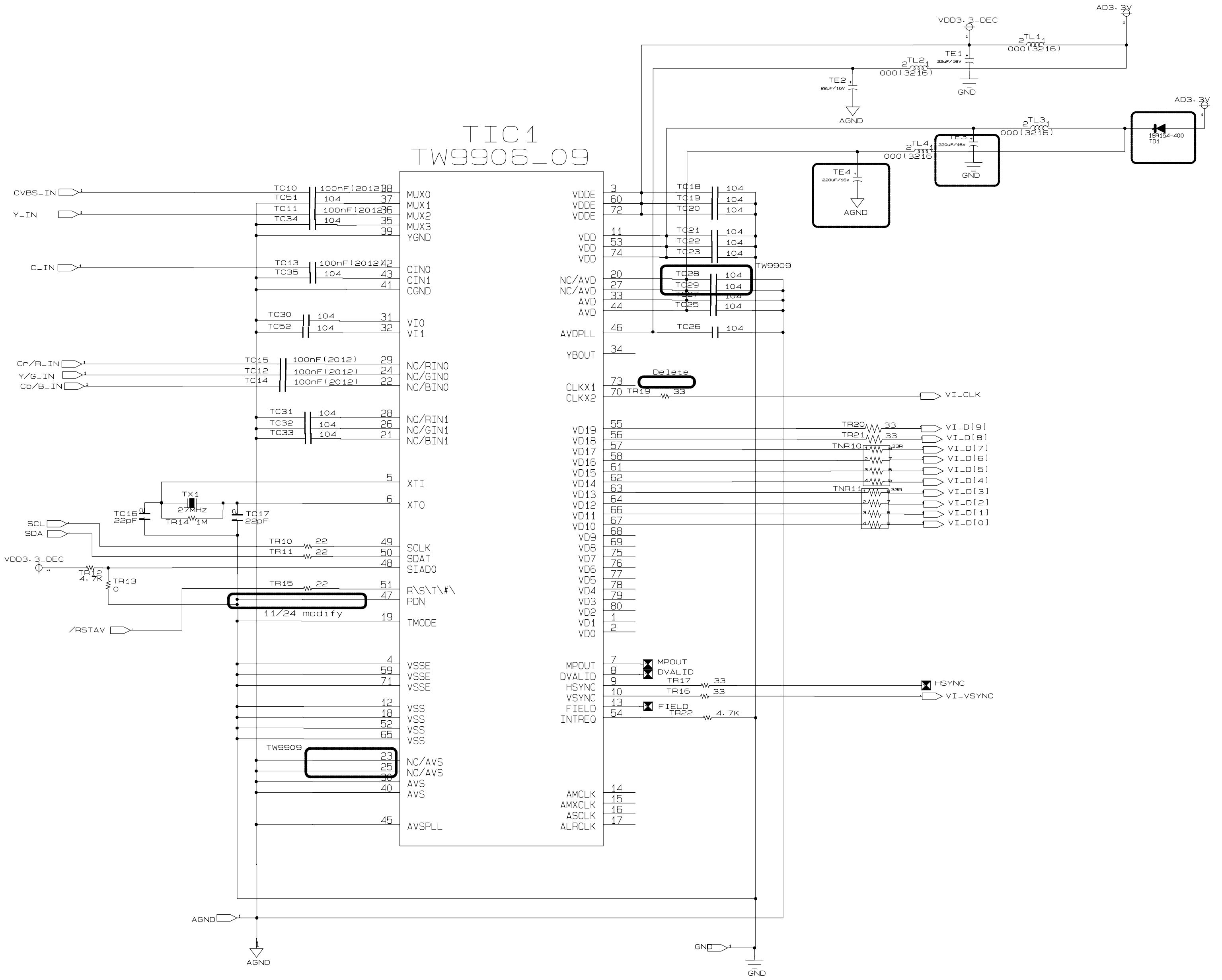
12-12 DMN9602 (DVD PCB)


DIC1
DMN8602
DIC6
74ALVC16373
DIC3
AM29DL323GB
DIC7
74LVX541
K6X8016T3B
DIC4
DIC5
BU4053(x)
ATCN1
40PIN_FPC_CON
DCN1
50R-JMD55-G1-TF
12/29
GPIO[0]
GPIO[3]
Modify

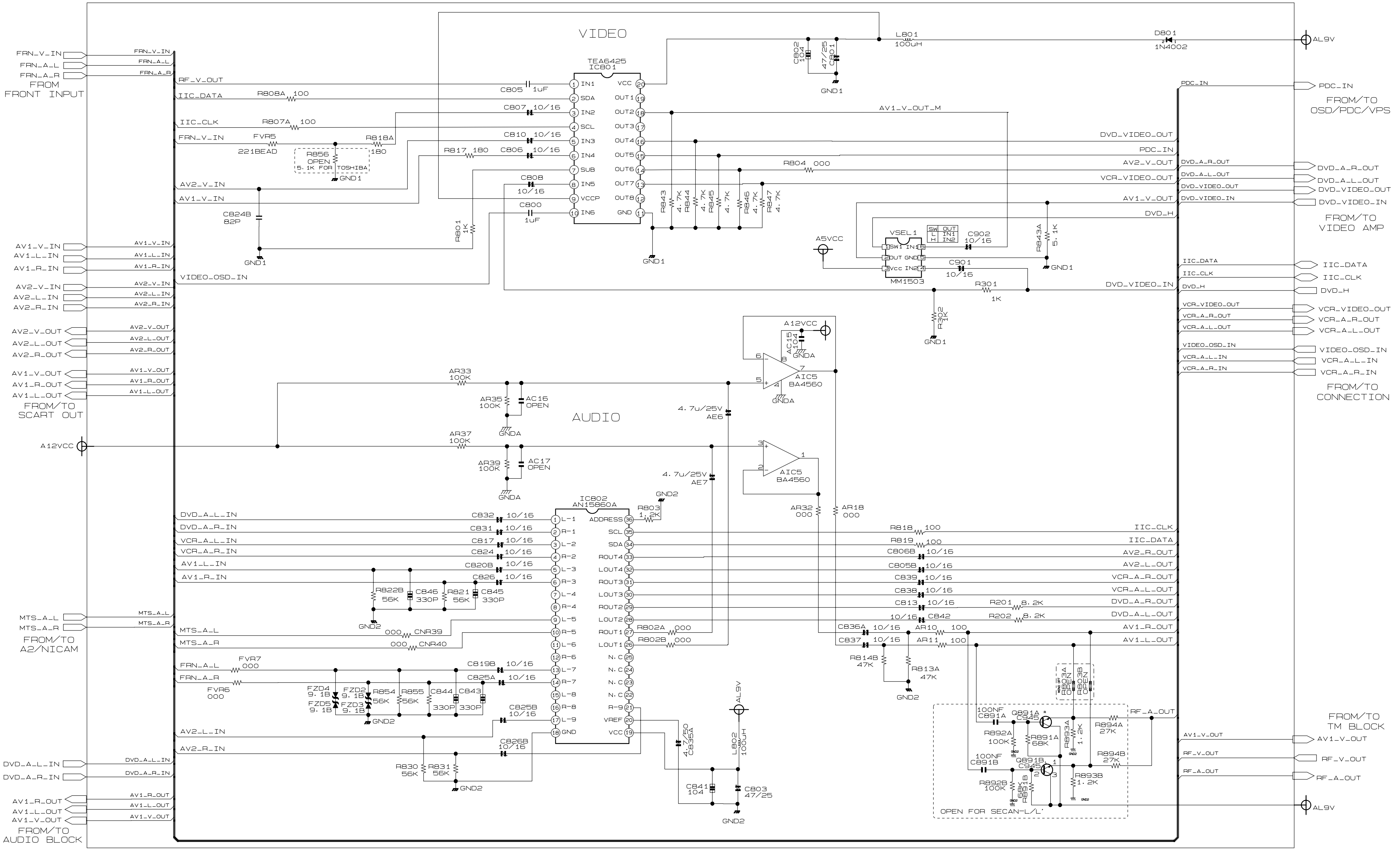
12-13 IEEE1394 (DVD PCB)


PHY POWER REGULATOR
D3.3V
V33PHY
PL1
000(3216)
PE1
220uF/16V
PC1
PE2
220uF/16V
PC2
04/06/15 Cap value modified
to remove power ripple
GND
PC3
15pF
PC4
15pF
PY1
24.576MHz
PR59
OPEN(1M)
PR60
000
PC13
/DV_RST
PR24 000
PL3
000(3216)
PC6
PC7
PC8
PC9
PC11
PC12
PC14
PC15
PC16
PC17
PC5
PC10
BIO_LREQ
BLM21A121(2012)
PL2
BIO_PHY_CLK
PR1 33
PC21
OPEN
CNA1
BIO_PHY_CTL0
BIO_PHY_CTL1
BIO_PHY_DATA0
BIO_PHY_DATA1
BIO_PHY_DATA2
BIO_PHY_DATA3
BIO_PHY_DATA4
BIO_PHY_DATA5
BIO_PHY_DATA6
BIO_PHY_DATA7
22R
PRA1
PRA2
22R
BIO_LPS
PIC1
TSB41AB1
LREQ
SYSCLK
CNA
CTL0
CTL1
D0
D1
D2
D3
D4
D5
D6
D7
PD
LPS
NC
DGND
DVDD
XO
XI
PLLGND
PLLVDD
FILTER1
FILTER0
RESET
AVDD
AGND
R1
R0
TPBIAS
TPA+
TPA-
TPB+
TPB-
C/LKON
PC0
PC1
PC2
ISO
CPS
TESTM
SE
SM
PR23 6.34K(1%)->6.2K
PR21 56
PR22 56
PR20 56
PR19 56
PC18
PR18 5.1K
PE5
PR2 1K
PR17 1K
PR3 OPEN
BIO_LINK_ON
PR5 000
PR4 10K
PR6 OPEN
PR7 OPEN
PR8 OPEN
PR9 10K
PR10 10K
PR16 1K
PR15 1K
PR14 1K
PR13 1K
PR12 1K
PR11 OPEN

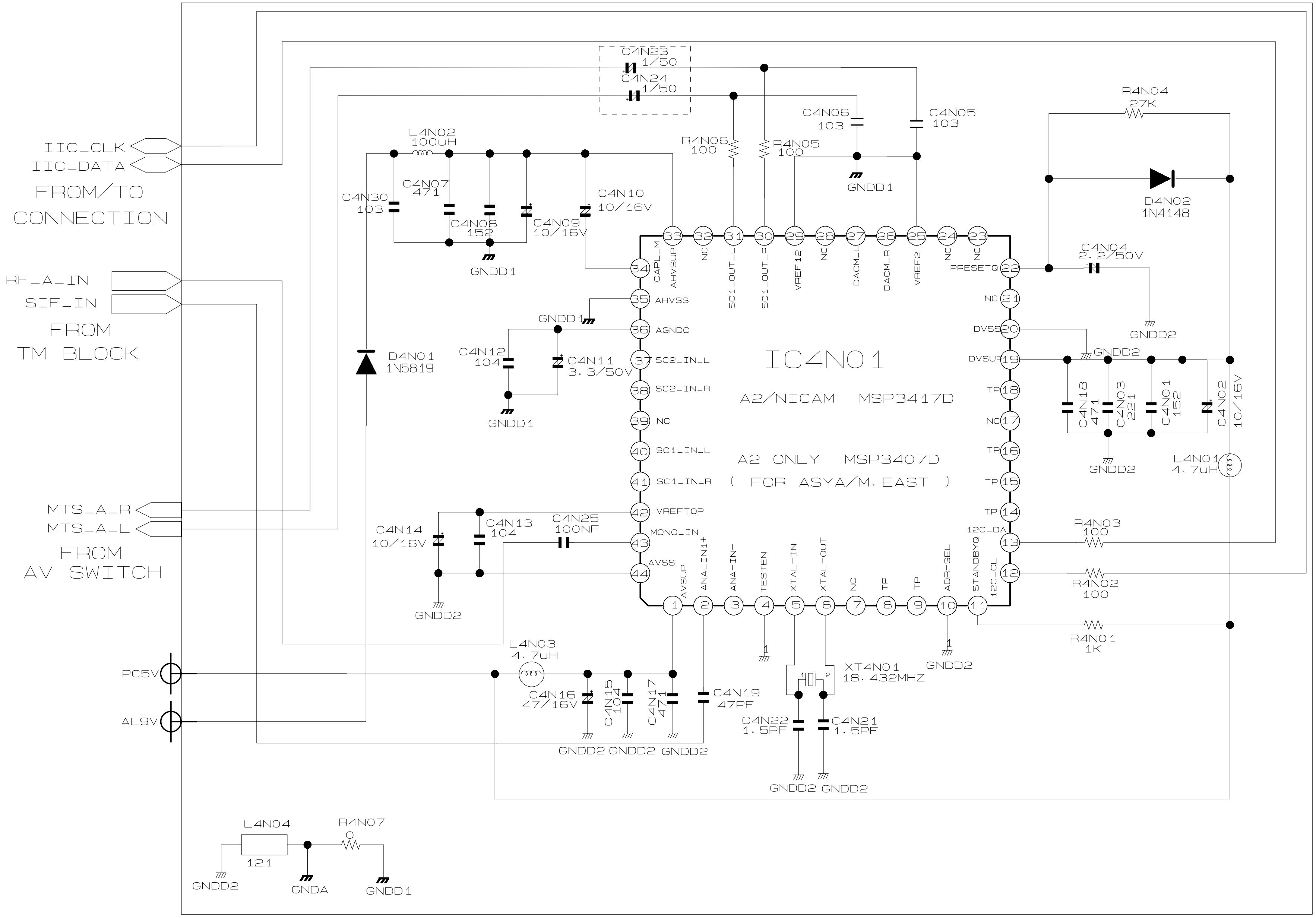
12-14 Video Decoder (DVD PCB)


TIC1
TW9906_09
CVBS_IN
Y_IN
C_IN
Cr/R_IN
Y/G_IN
Cb/B_IN
SCL
SDA
VDD3.3_DEC
/RSTAV
AGND
GND
AD3.3V
TL1 000(3216)
TL2 000(3216)
TL3 000(3216)
TL4 000(3216)
TE1 22uF/16v
TE2 22uF/16v
TE3 220uF/16v
TE4 220uF/16v
1SR154-400 TD1
TC10 100nF(2012)
TC51 104
TC11 100nF(2012)
TC34 104
TC13 100nF(2012)
TC35 104
TC30 104
TC52 104
TC15 100nF(2012)
TC12 100nF(2012)
TC14 100nF(2012)
TC31 104
TC32 104
TC33 104
TX1 27MHz
TR14 1M
TC16 22pF
TC17 22pF
TR10 22
TR11 22
TR12 4.7K
TR13 0
TR15 22
11/24 modify
TW9909
MUX0 MUX1 MUX2 MUX3 YGND
CIN0 CIN1 CGND
VI0 VI1
NC/RIN0 NC/GIN0 NC/BIN0
NC/RIN1 NC/GIN1 NC/BIN1
XTI XTO
SCLK SDAT SIAD0
R\S\T\#\ PDN TMODE
VSSE VSSE VSSE
VSS VSS VSS VSS
NC/AVS NC/AVS AVS AVS
AVSPLL
VDDE VDDE VDDE
VDD VDD VDD
NC/AVD NC/AVD AVD AVD
AVDPLL
YBOUT
CLKX1 CLKX2
VD19 … VD0
MPOUT DVALID HSYNC VSYNC FIELD INTREQ
AMCLK AMXCLK ASCLK ALRCLK
TC18 104
TC19 104
TC20 104
TC21 104
TC22 104
TC23 104
TC28 104
TC29 104
TC27 104
TC25 104
TC26 104
Delete
TR19 33
VI_CLK
TR20 33
TR21 33
TNR10 33R
TNR11 33R
VI_D[9]
VI_D[8]
VI_D[7]
VI_D[6]
VI_D[5]
VI_D[4]
VI_D[3]
VI_D[2]
VI_D[1]
VI_D[0]
MPOUT
DVALID
TR17 33
TR16 33
HSYNC
VI_VSYNC
FIELD
TR22 4.7K

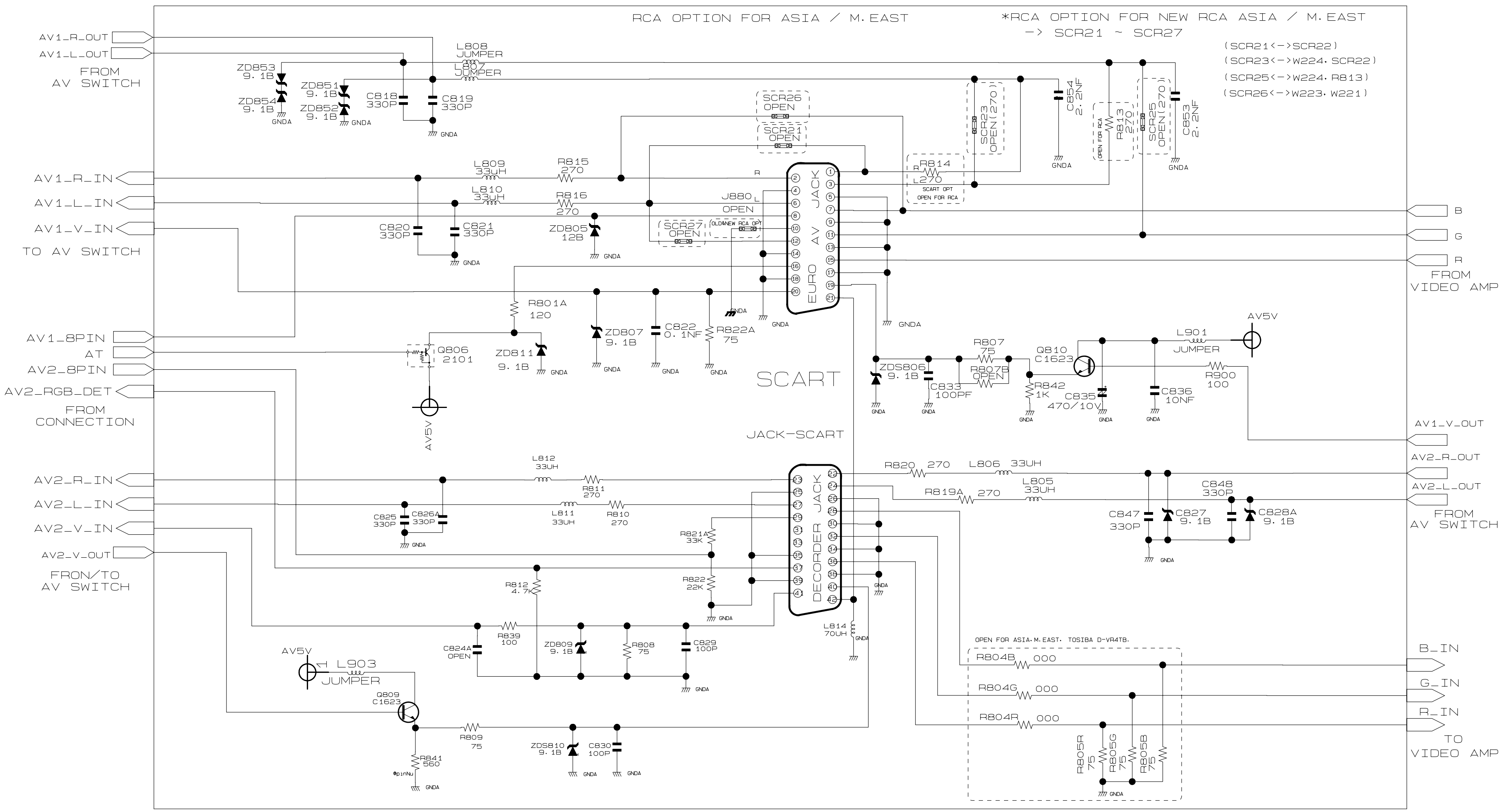
12-15 A/V MUX (Jack PCB)


VIDEO
AUDIO
FRN_V_IN
FRN_A_L
FRN_A_R
FROM FRONT INPUT
AV1_V_IN
AV1_L_IN
AV1_R_IN
AV2_V_IN
AV2_L_IN
AV2_R_IN
AV2_V_OUT
AV2_L_OUT
AV2_R_OUT
AV1_V_OUT
AV1_R_OUT
AV1_L_OUT
FROM/TO SCART OUT
A12VCC
MTS_A_L
MTS_A_R
FROM/TO A2/NICAM
DVD_A_L_IN
DVD_A_R_IN
AV1_R_OUT
AV1_L_OUT
AV1_V_OUT
FROM/TO AUDIO BLOCK
RF_V_OUT
IIC_DATA
IIC_CLK
VIDEO_OSD_IN
TEA6425
IC801
IN1
SDA
IN2
SCL
IN3
IN4
SUB
IN5
VCCP
IN6
VCC
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
OUT7
OUT8
GND
R808A 100
R807A 100
FVR5 221BEAD
R818A 180
R856 OPEN 5.1K FOR TOSHIBA
R817 180
C805 1uF
C807 10/16
C810 10/16
C806 10/16
C808 10/16
C800 1uF
C824B 82P
R801 1K
R843 4.7K
R844 4.7K
R845 4.7K
R846 4.7K
R847 4.7K
C802 104
C801 47/25
L801 100uH
D801 1N4002
AL9V
GND1
AV1_V_OUT_M
R804 000
A5VCC
VSEL1
MM1503
SW1 IN1
OUT GND
Vcc IN2
SW OUT
L IN1
H IN2
C902 10/16
C901 10/16
R301 1K
R302 10K
R843A 5.1K
PDC_IN
DVD_VIDEO_OUT
AV2_V_OUT
VCR_VIDEO_OUT
AV1_V_OUT
DVD_H
DVD_VIDEO_IN
FROM/TO OSD/PDC/VPS
DVD_A_R_OUT
DVD_A_L_OUT
FROM/TO VIDEO AMP
VCR_VIDEO_OUT
VCR_A_R_OUT
VCR_A_L_OUT
VIDEO_OSD_IN
VCR_A_L_IN
VCR_A_R_IN
FROM/TO CONNECTION
A12VCC
AC15 104
GNDA
AIC5
BA4560
AR33 100K
AR35 100K
AC16 OPEN
AR37 100K
AR39 100K
AC17 OPEN
4.7u/25V AE6
4.7u/25V AE7
AR32 000
AR18 000
GND2
IC802
AN15860A
L-1
R-1
L-2
R-2
L-3
R-3
L-4
R-4
L-5
R-5
L-6
R-6
L-7
R-7
L-8
R-8
L-9
GND
ADDRESS
SCL
SDA
ROUT4
LOUT4
ROUT3
LOUT3
ROUT2
LOUT2
ROUT1
LOUT1
N.C
R-9
VREF
VCC
R803 1.2K
C832 10/16
C831 10/16
C817 10/16
C824 10/16
C820B 10/16
C826 10/16
R822B 56K
C846 330P
R821 56K
C845 330P
000 CNR39
000 CNR40
FVR7 000
FVR6 000
FZD4 9.1B
FZD5 9.1B
FZD2 9.1B
FZD3 9.1B
R854 56K
R855 56K
C844 330P
C843 330P
C819B 10/16
C825A 10/16
C825B 10/16
C826B 10/16
R830 56K
R831 56K
C835A 4.7/50
L802 100uH
C841 104
C803 47/25
R802A 000
R802B 000
R818 100
R819 100
C806B 10/16
C805B 10/16
C839 10/16
C838 10/16
C813 10/16
C842 10/16
R201 8.2K
R202 8.2K
C836A 10/16
C837 10/16
AR10 100
AR11 100
R814B 47K
R813A 47K
IIC_CLK
IIC_DATA
AV2_R_OUT
AV2_L_OUT
VCR_A_R_OUT
VCR_A_L_OUT
DVD_A_R_OUT
DVD_A_L_OUT
AV1_R_OUT
AV1_L_OUT
RF_A_OUT
100NF C891A
Q891A C945
R892A 100K
R891A 68K
R893A 1.2K
R894A 27K
R894B 27K
100NF C891B
Q891B C945
R892B 100K
R891B 68K
R893B 1.2K
R803A ZERO
R803B ZERO
OPEN FOR SECAN-L/L'
FROM/TO TM BLOCK
AV1_V_OUT
RF_V_OUT
RF_A_OUT
AL9V

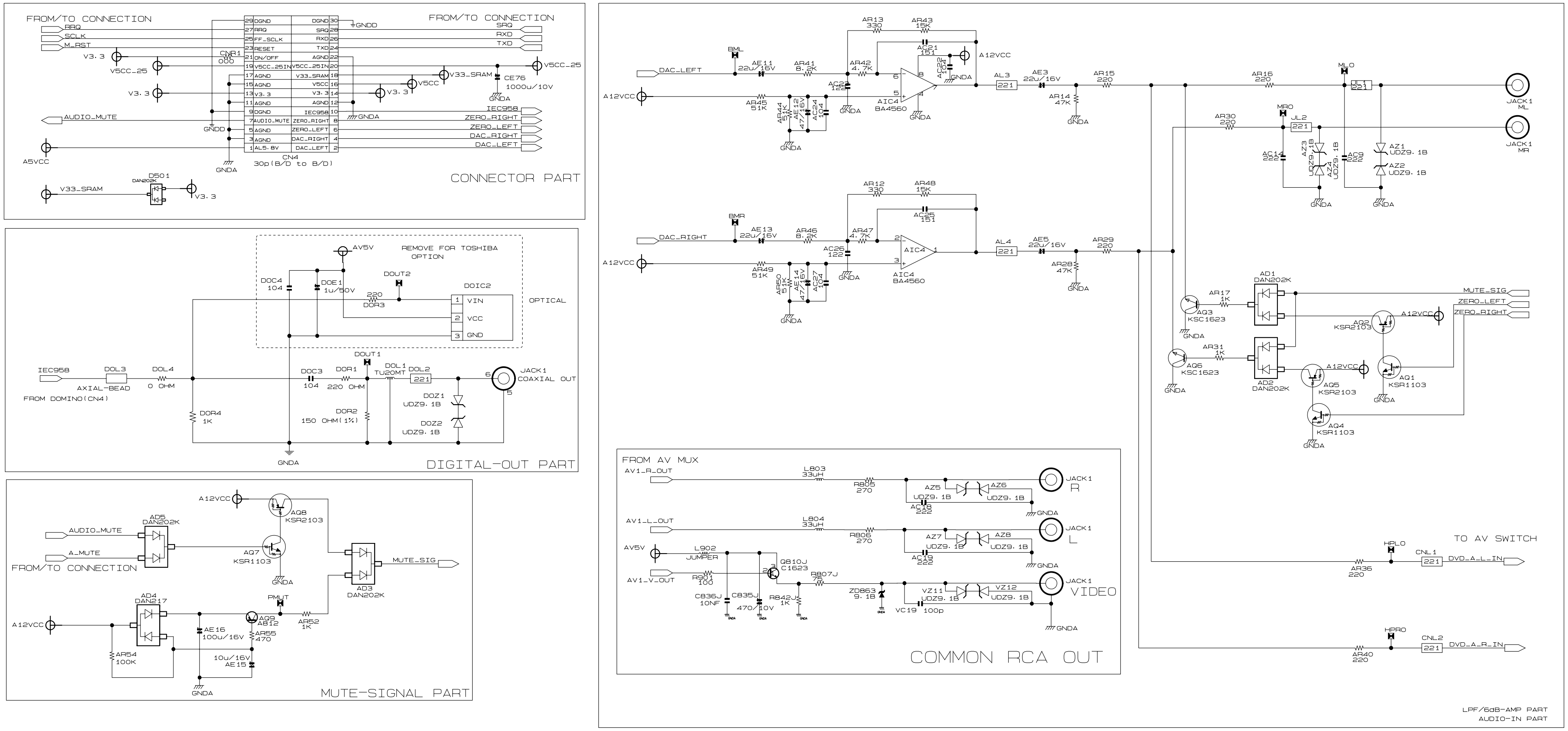
12-16 A2/NICAM (Jack PCB)


IIC_CLK
IIC_DATA
FROM/TO CONNECTION
RF_A_IN
SIF_IN
FROM TM BLOCK
MTS_A_R
MTS_A_L
FROM AV SWITCH
PC5V
AL9V
C4N23 1/50
C4N24 1/50
L4N02 100uH
C4N30 103
C4N07 471
C4N08 152
C4N09 10/16V
C4N10 10/16V
R4N06 100
R4N05 100
C4N06 103
C4N05 103
GNDD1
R4N04 27K
D4N02 1N4148
C4N04 2.2/50V
GNDD2
D4N01 1N5819
C4N12 104
C4N11 3.3/50V
IC4N01
A2/NICAM MSP3417D
A2 ONLY MSP3407D
(FOR ASYA/M.EAST)
CAPL_M
AHVSUP
NC
SC1_OUT_L
SC1_OUT_R
VREF12
DACM_L
DACM_R
VREF2
PRESETQ
AHVSS
AGNDC
SC2_IN_L
SC2_IN_R
SC1_IN_L
SC1_IN_R
VREFTOP
MONO_IN
AVSS
DVSS
DVSUP
TP
12C_DA
12C_CL
AVSUP
ANA_IN1+
ANA-IN-
TESTEN
XTAL-IN
XTAL-OUT
ADR-SEL
STANDBYQ
C4N18 471
C4N03 221
C4N01 152
C4N02 10/16V
L4N01 4.7uH
R4N03 100
R4N02 100
R4N01 1K
C4N14 10/16V
C4N13 104
C4N25 100NF
L4N03 4.7uH
C4N16 47/16V
C4N15 104
C4N17 471
C4N19 47PF
XT4N01 18.432MHZ
C4N22 1.5PF
C4N21 1.5PF
L4N04 121
R4N07 0
GNDA

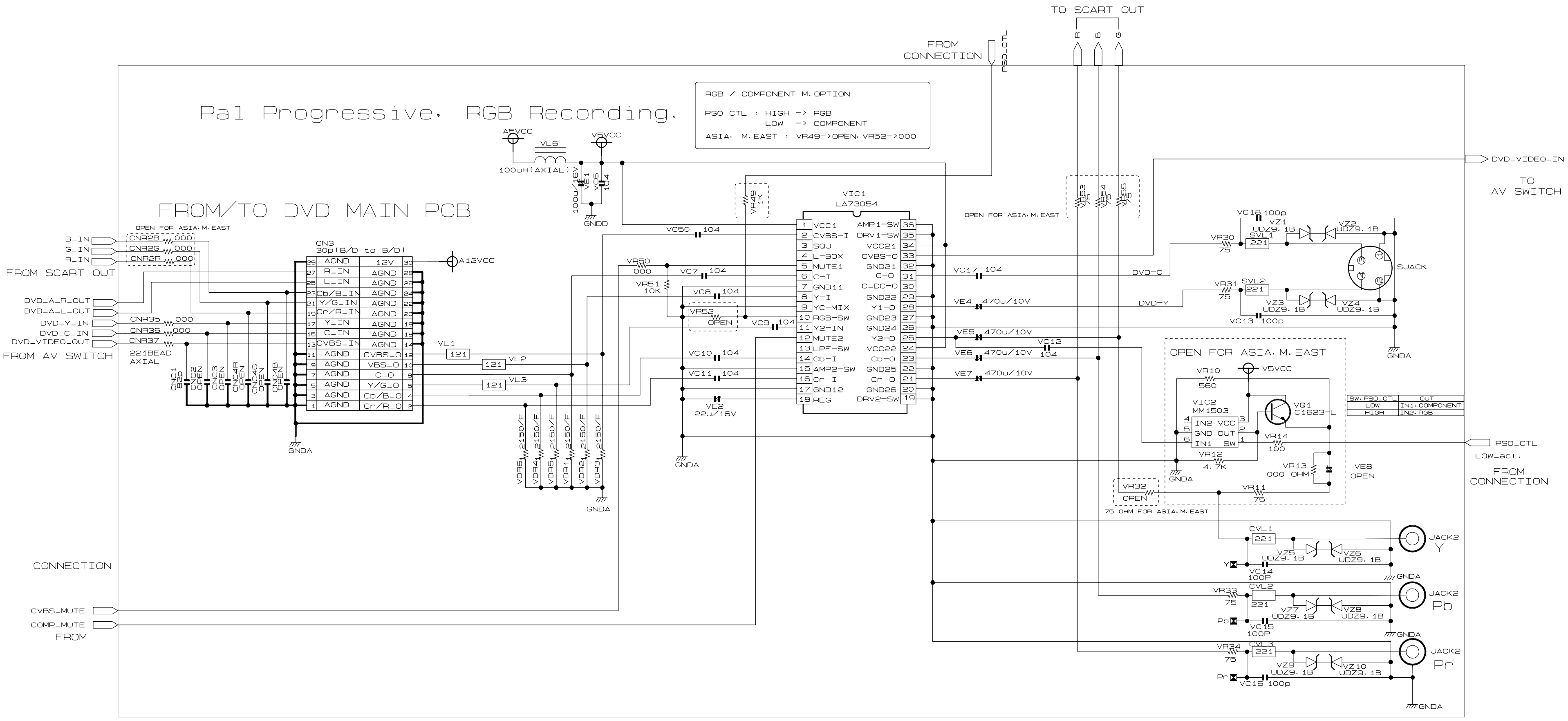
12-17 Scart (Jack PCB)


RCA OPTION FOR ASIA / M.EAST
*RCA OPTION FOR NEW RCA ASIA / M.EAST
-> SCR21 ~ SCR27
(SCR21<->SCR22)
(SCR23<->W224.SCR22)
(SCR25<->W224.R813)
(SCR26<->W223.W221)
AV1_R_OUT
AV1_L_OUT
FROM AV SWITCH
AV1_R_IN
AV1_L_IN
AV1_V_IN
TO AV SWITCH
AV1_8PIN
AT
AV2_8PIN
AV2_RGB_DET
FROM CONNECTION
AV2_R_IN
AV2_L_IN
AV2_V_IN
AV2_V_OUT
FRON/TO AV SWITCH
ZD853 9.1B
ZD854 9.1B
ZD851 9.1B
ZD852 9.1B
C818 330P
C819 330P
L808 JUMPER
L807 JUMPER
GNDA
SCR26 OPEN
SCR21 OPEN
SCR23 OPEN(270)
SCR25 OPEN(270)
C854 2.2NF
C853 2.2NF
OPEN FOR RCA
R813 270
R814
L270
SCART OPT
OPEN FOR RCA
L809 33uH
R815 270
L810 33uH
R816 270
J880 OPEN
C820 330P
C821 330P
ZD805 12B
SCR27 OPEN
OLD&NEW RCA OPT
EURO AV JACK
R801A 120
ZD807 9.1B
C822 0.1NF
R822A 75
Q806 2101
ZD811 9.1B
AV5V
SCART
JACK-SCART
B
G
R
FROM VIDEO AMP
AV5V
L901 JUMPER
R807 75
Q810 C1623
R807B OPEN
ZDS806 9.1B
C833 100PF
R842 1K
C835 470/10V
C836 10NF
R900 100
AV1_V_OUT
AV2_R_OUT
AV2_L_OUT
FROM AV SWITCH
R820 270
L806 33UH
R819A 270
L805 33UH
C848 330P
C847 330P
C827 9.1B
C828A 9.1B
L812 33UH
R811 270
L811 33UH
R810 270
C825 330P
C826A 330P
R821A 33K
R822 22K
R812 4.7K
DECORDER JACK
L814 70UH
R839 100
C824A OPEN
ZD809 9.1B
R808 75
C829 100P
AV5V
L903 JUMPER
Q809 C1623
R809 75
ZDS810 9.1B
C830 100P
R841 560
OPEN FOR ASIA.M.EAST. TOSIBA D-VR4TB.
R804B 000
R804G 000
R804R 000
R805R 75
R805G 75
R805B 75
B_IN
G_IN
R_IN
TO VIDEO AMP

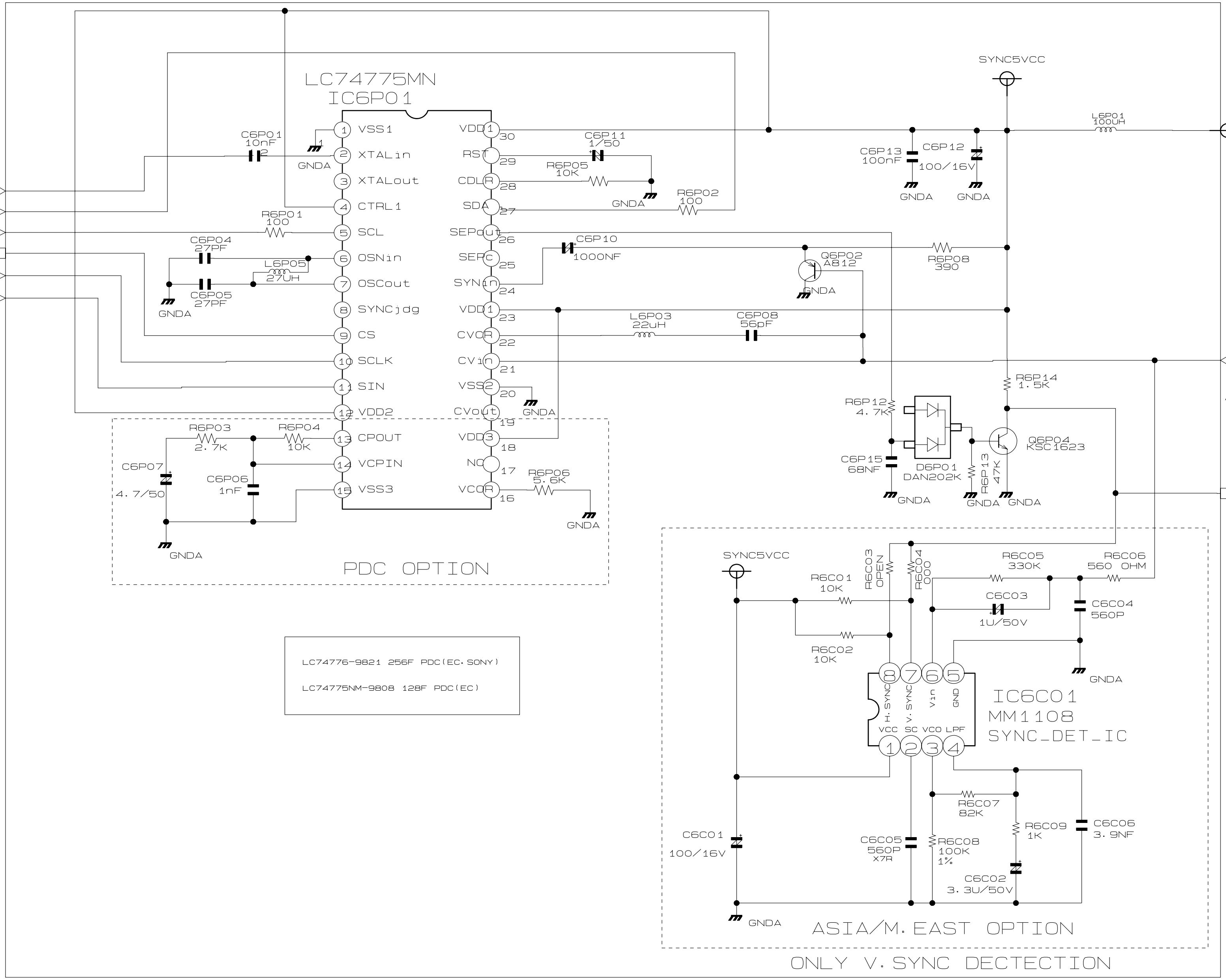
12-18 Audio Rca Output (Jack PCB)


FROM/TO CONNECTION
RRQ
SCLK
M_RST
V3.3
V5CC_25
CNR1
000
AUDIO_MUTE
GNDD
A5VCC
GNDA
CN4
30p(B/D to B/D)
SRQ
RXD
TXD
V5CC_25
V33_SRAM
V5CC
CE76
1000u/10V
IEC958
ZERO_RIGHT
ZERO_LEFT
DAC_RIGHT
DAC_LEFT
D501
DAN202K
V33_SRAM
CONNECTOR PART
AV5V
REMOVE FOR TOSHIBA OPTION
DOC4
104
DOE1
1u/50V
DOUT2
220
DOR3
DOIC2
VIN
VCC
GND
OPTICAL
DOUT1
IEC958
DOL3
AXIAL-BEAD
DOL4
0 OHM
FROM DOMINO(CN4)
DOC3
104
DOR1
220 OHM
DOL1
TU20MT
DOL2
221
JACK1
COAXIAL OUT
DOZ1
UDZ9.1B
DOZ2
UDZ9.1B
DOR2
150 OHM(1%)
DOR4
1K
DIGITAL-OUT PART
A12VCC
AQ8
KSR2103
AD5
DAN202K
AUDIO_MUTE
A_MUTE
AQ7
KSR1103
FROM/TO CONNECTION
MUTE_SIG
AD3
DAN202K
AD4
DAN217
PMUT
AQ9
A812
AR52
1K
AE16
100u/16V
AR55
470
AR54
100K
10u/16V
AE15
MUTE-SIGNAL PART
DAC_LEFT
BML
AE11
22u/16V
AR41
8.2K
AR13
330
AR43
15K
AC21
151
AR42
4.7K
AC22
104
A12VCC
AIC4
BA4560
AR45
51K
AR44
AE12
47/16V
AC24
AL3
221
AE3
22u/16V
AR14
47K
AR15
220
AR16
220
MLO
JL1
221
JACK1
ML
AR30
220
MRO
JL2
221
AC14
222
AZ3
UDZ9.1B
AZ4
AC9
222
AZ1
UDZ9.1B
AZ2
UDZ9.1B
JACK1
MR
DAC_RIGHT
BMR
AE13
22u/16V
AR46
8.2K
AR12
330
AR48
15K
AC25
151
AR47
4.7K
AC26
122
AR49
51K
AR50
AE14
47/16V
AC27
AL4
221
AE5
22u/16V
AR28
47K
AR29
220
AR17
1K
AQ3
KSC1623
AD1
DAN202K
MUTE_SIG
ZERO_LEFT
ZERO_RIGHT
AQ2
KSR2103
AR31
1K
AQ6
KSC1623
AD2
DAN202K
AQ5
KSR2103
AQ1
KSR1103
AQ4
KSR1103
FROM AV MUX
AV1_R_OUT
L803
33uH
R805
270
AZ5
UDZ9.1B
AZ6
UDZ9.1B
AC18
222
JACK1
R
AV1_L_OUT
L804
33uH
R806
270
AZ7
UDZ9.1B
AZ8
UDZ9.1B
AC19
222
JACK1
L
AV5V
L902
JUMPER
Q810J
C1623
AV1_V_OUT
R901
100
R807J
75
C836J
10NF
C835J
470/10V
R842J
1K
ZD863
9.1B
VZ11
UDZ9.1B
VZ12
UDZ9.1B
VC19
100p
JACK1
VIDEO
COMMON RCA OUT
TO AV SWITCH
HPLO
CNL1
221
DVD_A_L_IN
AR36
220
HPRO
CNL2
221
DVD_A_R_IN
AR40
220
LPF/6dB-AMP PART
AUDIO-IN PART

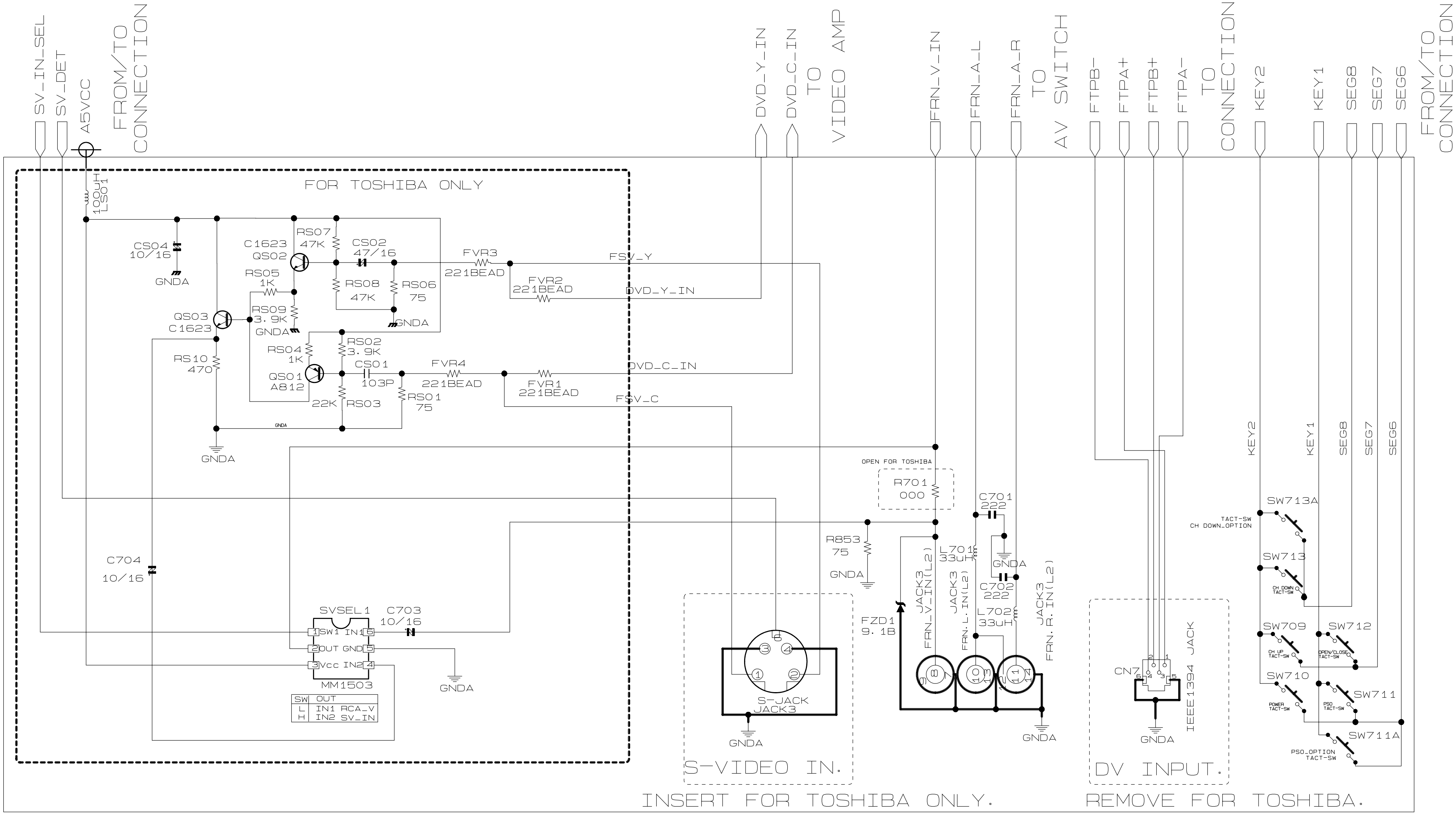
12-19 Video Amp (Jack PCB)


Pal Progressive, RGB Recording.
RGB / COMPONENT M.OPTION
PSO_CTL : HIGH -> RGB
LOW -> COMPONENT
ASIA, M.EAST : VR49->OPEN, VR52->000
FROM/TO DVD MAIN PCB
TO SCART OUT
R
B
G
FROM CONNECTION
PSO_CTL
DVD_VIDEO_IN
TO AV SWITCH
B_IN
G_IN
R_IN
FROM SCART OUT
OPEN FOR ASIA,M.EAST
CNR2B 000
CNR2G 000
CNR2R 000
DVD_A_R_OUT
DVD_A_L_OUT
DVD_Y_IN
DVD_C_IN
DVD_VIDEO_OUT
FROM AV SWITCH
CNR35 000
CNR36 000
CNR37
221BEAD AXIAL
CNC1 82p
CNC2 OPEN
CNC3 OPEN
CNC4R OPEN
CNC4G OPEN
CNC4B OPEN
CN3
30p(B/D to B/D)
AGND
12V
R_IN
AGND
L_IN
Cb/B_IN
Y/G_IN
Cr/R_IN
Y_IN
C_IN
CVBS_IN
CVBS_O
VBS_O
C_O
Y/G_O
Cb/B_O
Cr/R_O
A12VCC
GNDA
A5VCC
VL6
100uH(AXIAL)
V5VCC
100u/16V VE1
VC6 104
GNDD
VL1 121
VL2 121
VL3 121
VDR6 2150/F
VDR4 2150/F
VDR5 2150/F
VDR1 2150/F
VDR2 2150/F
VDR3 2150/F
GNDA
VR49 1K
VC50 104
VR50 000
VR51 10K
VC7 104
VC8 104
VR52 OPEN
VC9 104
VC10 104
VC11 104
VE2 22u/16V
GNDA
VIC1
LA73054
1 VCC1
2 CVBS-I
3 SQU
4 L-BOX
5 MUTE1
6 C-I
7 GND11
8 Y-I
9 YC-MIX
10 RGB-SW
11 Y2-IN
12 MUTE2
13 LPF-SW
14 Cb-I
15 AMP2-SW
16 Cr-I
17 GND12
18 REG
36 AMP1-SW
35 DRV1-SW
34 VCC21
33 CVBS-O
32 GND21
31 C-O
30 C_DC-O
29 GND22
28 Y1-O
27 GND23
26 GND24
25 Y2-O
24 VCC22
23 Cb-O
22 GND25
21 Cr-O
20 GND26
19 DRV2-SW
VR53 75
VR54 75
VR55 75
OPEN FOR ASIA,M.EAST
VC17 104
VE4 470u/10V
VE5 470u/10V
VE6 470u/10V
VE7 470u/10V
VC12 104
DVD-C
DVD-Y
VC18 100p
VZ1 UDZ9.1B
VZ2 UDZ9.1B
VR30 75
SVL1 221
VR31 75
SVL2 221
VZ3 UDZ9.1B
VZ4 UDZ9.1B
VC13 100p
SJACK
GNDA
OPEN FOR ASIA,M.EAST
VR10 560
V5VCC
VIC2
MM1503
IN2 VCC
GND OUT
IN1 SW
VQ1
C1623-L
VR14 100
VR12 4.7K
VR13 000 OHM
VE8 OPEN
GNDA
VR11 75
VR32 OPEN
75 OHM FOR ASIA,M.EAST
SW,PSO_CTL | OUT
LOW | IN1,COMPONENT
HIGH | IN2,RGB
PSO_CTL
LOW_act.
FROM CONNECTION
CVL1 221
VZ5 UDZ9.1B
VZ6 UDZ9.1B
VC14 100P
Y
JACK2 Y
GNDA
VR33 75
CVL2 221
VZ7 UDZ9.1B
VZ8 UDZ9.1B
VC15 100P
Pb
JACK2 Pb
GNDA
VR34 75
CVL3 221
VZ9 UDZ9.1B
VZ10 UDZ9.1B
VC16 100p
Pr
JACK2 Pr
GNDA
CONNECTION
CVBS_MUTE
COMP_MUTE
FROM

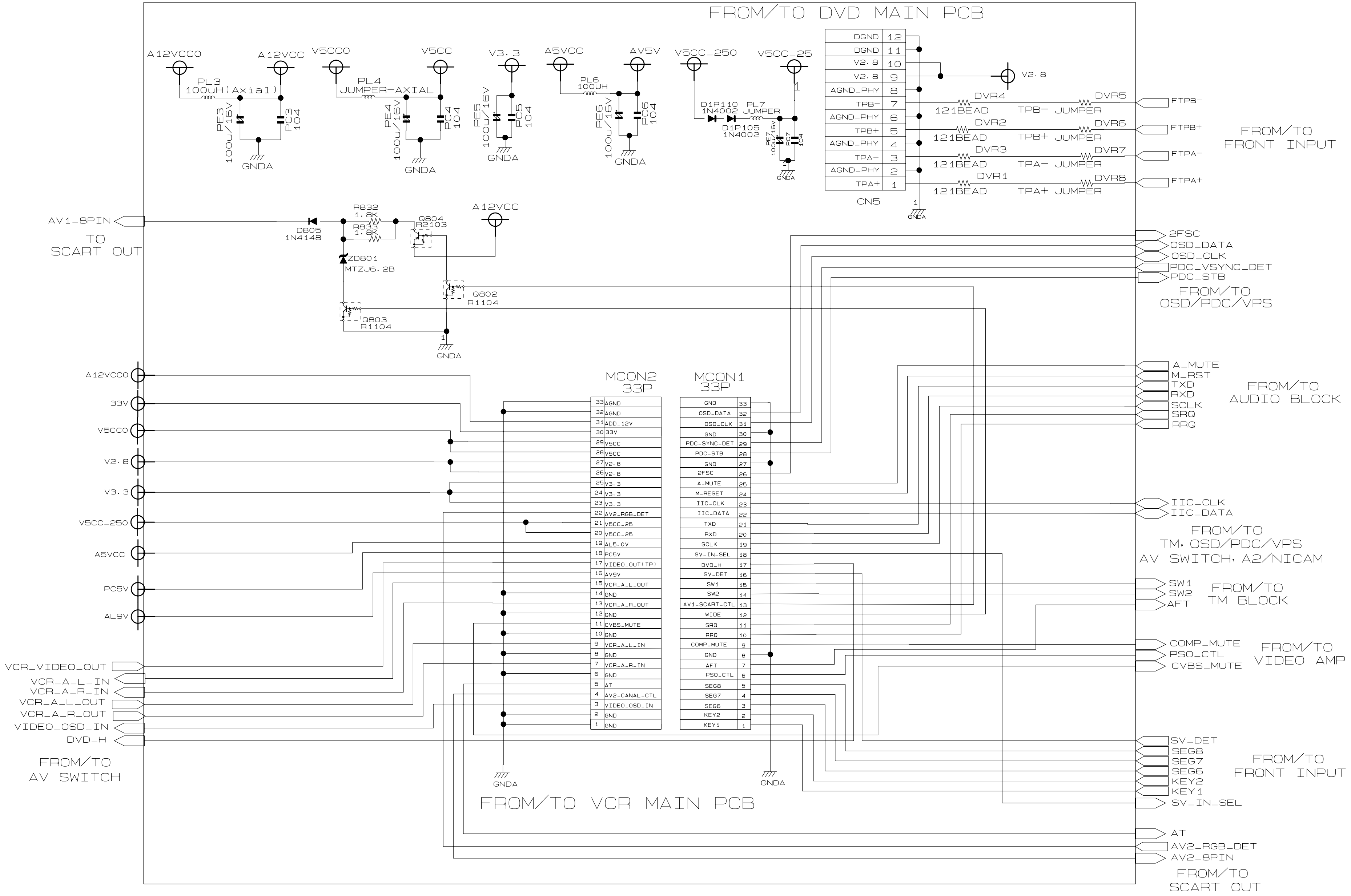
12-20 VPS/PDC (Jack PCB)


LC74775MN
IC6P01
VSS1
XTALin
XTALout
CTRL1
SCL
OSNin
OSCout
SYNCjdg
CS
SCLK
SIN
VDD2
CPOUT
VCPIN
VSS3
VDD1
RST
CDLR
SDA
SEPout
SEPC
SYNin
VDD1
CVOR
CVin
VSS2
CVout
VDD3
NC
VCOR
C6P01 10nF
C6P11 1/50
R6P05 10K
R6P02 100
R6P01 100
C6P04 27PF
L6P05 27UH
C6P05 27PF
C6P10 1000NF
L6P03 22uH
C6P08 56pF
R6P03 2.7K
R6P04 10K
C6P07 4.7/50
C6P06 1nF
R6P06 5.6K
GNDA
2FSC
IIC_DATA
IIC_CLK
PDC_STB
OSD_CLK
OSD_DATA
FROM/TO CONNECTION
PDC OPTION
LC74776-9821 256F PDC(EC.SONY)
LC74775NM-9808 128F PDC(EC)
SYNC5VCC
L6P01 100UH
A5VCC
C6P13 100nF
C6P12 100/16V
Q6P02 A812
R6P08 390
R6P14 1.5K
R6P12 4.7K
C6P15 68NF
D6P01 DAN202K
R6P13 47K
Q6P04 KSC1623
PDC_IN
FROM AV SWITCH
PDC_VSYNC_DET
FROM/TO CONNECTION
SYNC5VCC
R6C01 10K
R6C03 OPEN
R6C04 000
R6C05 330K
R6C06 560 OHM
C6C03 1U/50V
C6C04 560P
R6C02 10K
H.SYNC
V.SYNC
Vin
GND
VCC
SC
VCO
LPF
IC6C01
MM1108
SYNC_DET_IC
R6C07 82K
R6C09 1K
C6C06 3.9NF
C6C01 100/16V
C6C05 560P X7R
R6C08 100K 1%
C6C02 3.3U/50V
ASIA/M.EAST OPTION
ONLY V.SYNC DECTECTION

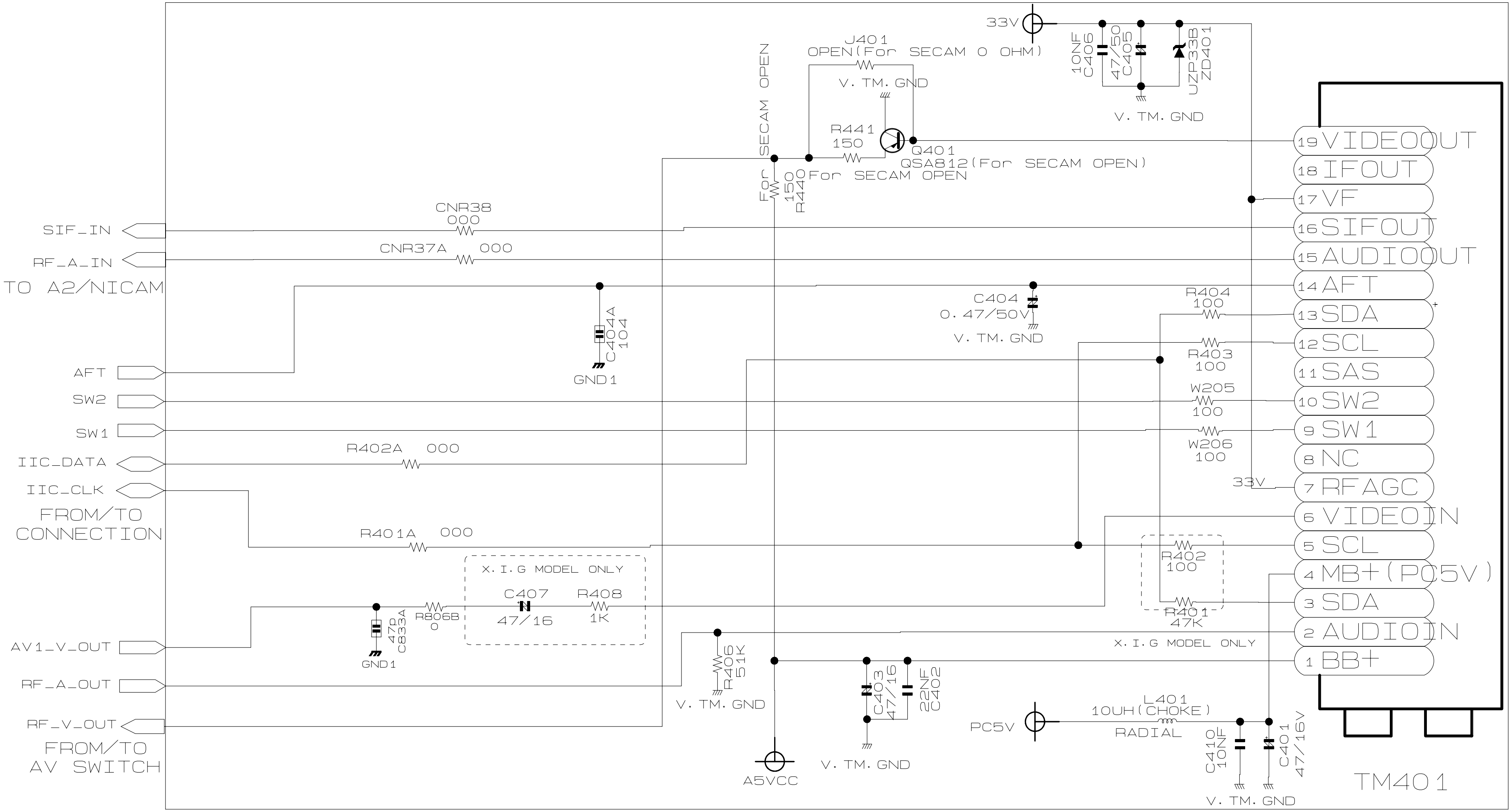
12-21 Front Input (Jack PCB)


SV_IN_SEL
SV_DET
A5VCC
FROM/TO CONNECTION
DVD_Y_IN
DVD_C_IN
TO VIDEO AMP
FRN_V_IN
FRN_A_L
FRN_A_R
TO AV SWITCH
FTPB-
FTPA+
FTPB+
FTPA-
TO CONNECTION
KEY2
KEY1
SEG8
SEG7
SEG6
FROM/TO CONNECTION
FOR TOSHIBA ONLY
100uH LS01
CS04 10/16
GNDA
C1623 QS02
RS07 47K
CS02 47/16
FVR3 221BEAD
FSV_Y
RS05 1K
RS08 47K
RS06 75
FVR2 221BEAD
DVD_Y_IN
RS09 3.9K
GNDA
QS03 C1623
RS04 1K
RS02 3.9K
CS01 103P
FVR4 221BEAD
DVD_C_IN
RS10 470
QS01 A812
FVR1 221BEAD
22K RS03
RS01 75
FSV_C
GNDA
OPEN FOR TOSHIBA
R701 000
C701 222
R853 75
L701 33uH
C702 222
L702 33uH
FZD1 9.1B
JACK3 FRN_V_IN(L2)
JACK3 FRN.L.IN(L2)
JACK3 FRN.R.IN(L2)
C704 10/16
SVSEL1
C703 10/16
SW1 IN1
OUT GND
Vcc IN2
MM1503
SW OUT
L IN1 RCA_V
H IN2 SV_IN
S-JACK JACK3
S-VIDEO IN.
CN7
IEEE1394 JACK
DV INPUT.
SW713A
TACT-SW CH DOWN_OPTION
SW713
CH DOWN TACT-SW
SW709
CH UP TACT-SW
SW712
OPEN/CLOSE TACT-SW
SW710
POWER TACT-SW
PSO TACT-SW
SW711
SW711A
PSO_OPTION TACT-SW
INSERT FOR TOSHIBA ONLY.
REMOVE FOR TOSHIBA.

12-22 Connection (Jack PCB)


FROM/TO DVD MAIN PCB
A12VCC0
A12VCC
PL3
100uH(Axial)
PE3
100u/16V
PC3
104
GNDA
V5CC0
V5CC
PL4
JUMPER-AXIAL
PE4
100u/16V
PC4
104
V3.3
PE5
100u/16V
PC5
104
A5VCC
AV5V
PL6
100UH
PE6
100u/16V
PC6
104
V5CC_250
V5CC_25
D1P110
1N4002
PL7
JUMPER
D1P105
1N4002
PE7
100u/16V
PC7
104
DGND 12
DGND 11
V2.8 10
V2.8 9
AGND_PHY 8
TPB- 7
AGND_PHY 6
TPB+ 5
AGND_PHY 4
TPA- 3
AGND_PHY 2
TPA+ 1
CN5
V2.8
DVR4
121BEAD
DVR5
TPB- JUMPER
DVR2
DVR6
TPB+ JUMPER
DVR3
DVR7
TPA- JUMPER
DVR1
DVR8
TPA+ JUMPER
FTPB-
FTPB+
FTPA-
FTPA+
FROM/TO FRONT INPUT
AV1_8PIN
TO SCART OUT
D805
1N4148
R832
1.8K
R833
1.8K
Q804
R2103
A12VCC
ZD801
MTZJ6.2B
Q802
R1104
Q803
R1104
2FSC
OSD_DATA
OSD_CLK
PDC_VSYNC_DET
PDC_STB
FROM/TO OSD/PDC/VPS
A12VCC0
33V
V5CC0
V2.8
V3.3
V5CC_250
A5VCC
PC5V
AL9V
MCON2 33P
33 AGND
32 AGND
31 ADD_12V
30 33V
29 V5CC
28 V5CC
27 V2.8
26 V2.8
25 V3.3
24 V3.3
23 V3.3
22 AV2_RGB_DET
21 V5CC_25
20 V5CC_25
19 AL5.0V
18 PC5V
17 VIDEO_OUT(TP)
16 AV9V
15 VCR_A_L_OUT
14 GND
13 VCR_A_R_OUT
12 GND
11 CVBS_MUTE
10 GND
9 VCR_A_L_IN
8 GND
7 VCR_A_R_IN
6 GND
5 AT
4 AV2_CANAL_CTL
3 VIDEO_OSD_IN
2 GND
1 GND
MCON1 33P
GND 33
OSD_DATA 32
OSD_CLK 31
GND 30
PDC_SYNC_DET 29
PDC_STB 28
GND 27
2FSC 26
A_MUTE 25
M_RESET 24
IIC_CLK 23
IIC_DATA 22
TXD 21
RXD 20
SCLK 19
SV_IN_SEL 18
DVD_H 17
SV_DET 16
SW1 15
SW2 14
AV1_SCART_CTL 13
WIDE 12
SRQ 11
RRQ 10
COMP_MUTE 9
GND 8
AFT 7
PSO_CTL 6
SEG8 5
SEG7 4
SEG6 3
KEY2 2
KEY1 1
A_MUTE
M_RST
TXD
RXD
SCLK
SRQ
RRQ
FROM/TO AUDIO BLOCK
IIC_CLK
IIC_DATA
FROM/TO TM, OSD/PDC/VPS AV SWITCH, A2/NICAM
SW1
SW2
AFT
FROM/TO TM BLOCK
COMP_MUTE
PSO_CTL
CVBS_MUTE
FROM/TO VIDEO AMP
VCR_VIDEO_OUT
VCR_A_L_IN
VCR_A_R_IN
VCR_A_L_OUT
VCR_A_R_OUT
VIDEO_OSD_IN
DVD_H
FROM/TO AV SWITCH
SV_DET
SEG8
SEG7
SEG6
KEY2
KEY1
SV_IN_SEL
FROM/TO FRONT INPUT
FROM/TO VCR MAIN PCB
AT
AV2_RGB_DET
AV2_8PIN
FROM/TO SCART OUT

12-23 TM (Jack PCB)


33V
J401
OPEN(For SECAM 0 OHM)
V. TM. GND
10NF
C406
47/50
C405
UZP33B
ZD401
V. TM. GND
SECAM OPEN
For
R441
150
Q401
QSA812(For SECAM OPEN)
150
R440
For SECAM OPEN
19 VIDEOOUT
18 IFOUT
17 VF
16 SIFOUT
15 AUDIOOUT
14 AFT
13 SDA
12 SCL
11 SAS
10 SW2
9 SW1
8 NC
7 RFAGC
6 VIDEOIN
5 SCL
4 MB+(PC5V)
3 SDA
2 AUDIOIN
1 BB+
CNR38
000
SIF_IN
CNR37A 000
RF_A_IN
TO A2/NICAM
C404A
104
GND1
C404
0.47/50V
V. TM. GND
R404
100
R403
100
W205
100
W206
100
AFT
SW2
SW1
R402A 000
IIC_DATA
IIC_CLK
FROM/TO
CONNECTION
33V
R401A 000
X.I.G MODEL ONLY
C407
47/16
R408
1K
R402
100
R401
47K
R806B
0
47P
C833A
GND1
AV1_V_OUT
X.I.G MODEL ONLY
R406
51K
RF_A_OUT
V. TM. GND
C403
47/16
22NF
C402
L401
10UH(CHOKE)
RADIAL
PC5V
RF_V_OUT
FROM/TO
AV SWITCH
A5VCC
V. TM. GND
C410
10NF
C401
47/16V
V. TM. GND
TM401

MEMO